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INFANT MORTALITY

RESULTS OF A FIELD STUDY IN NEW BEDFORD, MASS. BASED ON BIRTHS IN ONE YEAR

By

JESSAMINE S. WHITNEY

INFANT MORTALITY SERIES No. 10
Bureau Publication No. 68

WASHINGTON
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PLATE I.—GENERAL VIEW OF SOUTHERN PART OF NEW BEDFORD, SHOWING THE MANY COTTON MILLS LOCATED ALONG THE

U. S. DEPARTMENT OF LABOR
CHILDREN'S BUREAU
JULIA C. LATHROP, Chief

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF LABOR,
CHILDREN'S BUREAU,
Washington, October 11, 1919.

SIR: Herewith I transmit a report upon infant mortality in New Bedford, Mass.

This study was made under the direction of Miss Jessamine S. Whitney, who has written the report. Miss Helen Wilson made the special study of housing; Miss Viola I. Paradise and Miss Ruth True are responsible for the study on illegitimacy; Miss Emma Duke prepared the statistical material. The report was revised and edited by Dr. Robert M. Woodbury.

The Children's Bureau wishes to express its appreciation of the liberal cooperation given by the municipal authorities, civic associations, and the press in New Bedford.

JULIA C. LATHROP,
Chief.

Hon. W. B. WILSON,
Secretary of Labor.

INFANT MORTALITY, NEW BEDFORD, MASS.

INTRODUCTION.

CHOICE OF CITY.

New Bedford, Mass., was selected as one of the cities to be studied by the Children's Bureau in its series of investigations of the social conditions underlying infant mortality. Cities previously studied by the bureau and for which reports have been published are Johnstown, Pa., Manchester, N. H., Waterbury, Conn., Saginaw, Mich., and Brockton, Mass.

In 1913 New Bedford had the high infant mortality rate of 143 deaths under 1 year of age per 1,000 live births.[1] Not only was the rate high for this particular year, but the rates for preceding years also had been consistently high. New Bedford is a textile manufacturing city, and the four textile manufacturing cities—Fall River, Lowell, New Bedford, and Lawrence—had the highest infant mortality rates of any of the cities of Massachusetts of over 50,000 population except Holyoke (1910).[2] (See Table I.)

TABLE I.—*Infant mortality rates in 1913 for cities in Massachusetts having a population of 50,000 or over in 1910.*[a]

City.	Infant mortality rate.	City.	Infant mortality rate.
Lynn	82	Boston	110
Somerville	86	Lawrence	128
Brockton	98	**New Bedford**	**143**
Cambridge	98	Fall River	151
Springfield	104	Lowell	151
Worcester	105		

[a] Seventy-third Annual Report on Births, Marriages, and Deaths in Massachusetts for the year 1914, p. 07. Boston, 1915. Holyoke has been omitted from this table, since the presence of an infant asylum makes comparison unfair.

The birth rate and general death rate for New Bedford were also above the average for the State; the former, 33.8[3] was the second highest rate among the 12 largest cities in the State, while the death rate, 15.6,[1] was slightly above the average for Massachusetts.

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[1] Seventy-second Report of Births, Marriages, and Deaths in Massachusetts for the year 1913, pp. 4 and 8. Boston, 1914.

[2] Holyoke has an infant asylum which increases the rate abnormally, since deaths of infants in the asylum who were born outside the city are included.

[3] Based on estimated population, Bureau of the Census, Bulletin 133, p. 22, and on births in 1913, Seventy-third Annual Report on Births, Marriages, and Deaths in Massachusetts for the year 1914, p. 207. Boston, 1915.

An investigation of the causes of the excessive mortality of infants in one of these industrial centers seemed desirable; a study might indicate whether these high rates were due to industrial conditions, such as low wages and employment of mothers, or whether factors connected with the customs of the immigrant population, such as type of feeding, were responsible. The study in Manchester, N. H.,[2] also a textile-manufacturing city, has shown an excessive death rate among the infants of French-Canadian mothers, a large proportion of whom were gainfully employed. An important consideration in the selection was the contrast between New Bedford with a rate of 143 and Brockton, another industrial city about 30 miles away, with a rate of only 98. Studies were made by the bureau in both cities; Brockton, a shoe-manufacturing city, had well-paid union labor, with a relatively small proportion of foreign born; while New Bedford, devoted mainly to the manufacture of textiles, was characterized by a large foreign population and a relatively large proportion of women gainfully employed.

DESCRIPTION OF CITY.

New Bedford, in 1913 a city of approximately 107,000 population, is located 57 miles southeast of Boston, at the mouth of Acushnet River, where it broadens into Buzzards Bay. The city is attractively situated and occupies a particularly favorable position commercially, extending along the west bank of the Acushnet River for a distance of 10¾ miles and having unusual dockage facilities.

In former times it was the whaling center of the continent, but since the introduction of petroleum into general use as an illuminant the industry has declined.

In the past 40 years New Bedford has led in the manufacture of textiles and especially in the production of fine cotton yarns. The line of the water front, formerly indicated by the masts of "whalers" at anchor in the river, is now marked by tall chimneys of cotton mills along the banks. Besides the cotton mills, other industries have developed in New Bedford, including the manufacture of cordage, cigars, shoes, glass, silverware, mechanical tools, twist drills, and manufactures of copper.

The city has a large foreign element, attracted there by the demand in the textile and shipping industries for unskilled and semiskilled labor. In 1910 over 45 per cent of the population were foreign born, including large numbers of French Canadians, English, and Portuguese. Near the mills and along the river is crowded the bulk of the city's population. The residential districts where most of the native Americans live lie toward the west at some distance from the business section of the city.

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[1] Seventy-third Annual Report on Births, Marriages, and Deaths in Massachusetts for the year 1914, p. 201. Boston, 1915.

[2] Duncan, Beatrice Sheets, and Duke, Emma: Infant Mortality: Results of a Field Study in Manchester, N. H., based on births in one year. U. S. Children's Bureau Publication No. 20, Infant Mortality Series No. 6. Washington, 1917.

METHOD OF PROCEDURE.

Registered births during the calendar year 1913 were used as the basis of this study. Birth certificates for 3,633 babies born in the city during this period were copied from the records in the office of the city clerk. The death certificate also for any of these infants who had died under 1 year of age was copied on the corresponding record. After arranging the records by districts, women agents of the bureau visited the mothers to secure the information upon which the study was to be based.

Not all these births could be used in the detailed analysis. The number of removals, nonresidents, and infants for whom full information could not be obtained was 971. These were excluded. This study is based, then, upon 2,662 births, 2,587 live and 75 stillbirths.[1]

COOPERATION.

Too much praise can not be given to the city officials, the press, the clergy, public-spirited citizens, civic associations, and other agencies for generous assistance in the work. The value of the report is due in large part to the completeness of the information given by the mothers of New Bedford, and thanks are especially due to them for the information and cooperation which they so willingly gave.

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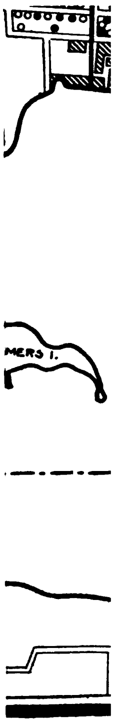
[1] For the discussion of mortality rates for the excluded groups and of the general infant mortality rate for the city the reader is referred to Appendix, pp. 73–74, 76, and especially pp. 77, 78.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ANALYSIS OF FINDINGS.

INFANT MORTALITY RATE.

he infant mortality rate for the selected group in New Bedford the year of the study was 130.3. Of 2,587 infants born alive, died before reaching the first birthday.

DISTRIBUTION BY PRECINCTS.

he distribution of births and deaths in the wards and precincts in w Bedford is shown in the spot map, and the infant mortality es for the different precincts are given in Table II. Precincts 1, 3, 13, and 17 all have high rates, precinct 2 having the highest e in the city, 177.5. This analysis by precincts shows the area in ich the infant mortality problem in New Bedford was most serious. should be mentioned that since the study was made the ward and ecinct lines have been changed; the wards and precincts discussed d shown on the map refer to those existing at the time of the study.

BLE II.—*Live births during selected year, infant deaths, and infant mortality rate, by district and precinct of residence.*[a]

District or precinct of residence.	Live births.	Infant deaths.	Infant mortality rate.[b]
The city	2,587	337	130.3
nfavorable" area	1,488	233	156.6
Precinct 1	469	65	138.6
Precinct 2	293	52	177.5
Precinct 3	190	24	126.3
Precinct 13	227	38	167.4
Precinct 17	309	54	174.8
avorable" area	1,099	104	94.6
Precinct 4	70	2	....
Precinct 5	104	10	96.2
Precinct 6	76	7	....
Precinct 7	44	6	....
Precinct 8	20	3	....
Precinct 9	59	5	....
Precinct 10	33	5	....
Precinct 11	45	7	....
Precinct 12	54	3	....
Precinct 14	48	2	....
Precinct 15	65	6	....
Precinct 16	243	21	86.4
Precinct 18	238	27	113.4

[a] Wards and precincts according to ward and precinct lines existing at the time of the study.
[b] Not shown where base is less than 100.

THE "UNFAVORABLE" AREA.

The five precincts designated as the "unfavorable" area lie on the iver front, the first three grouped together in the northern part of he city and the other two in the southern part. All are in the cotton-nill section. Within this area were found 57 per cent of all live births included in the study and 69 per cent of the deaths in this group; the infant mortality rate was 156.6 compared with 94.6 for the rest of the city.

Of course, not all parts of these precincts had unfavorable conditions, as, for example, the northern part of precinct 1,[1] which was almost rural in character; nor, on the other hand, did these precincts include all the sections where conditions were unfavorable. The precinct boundary lines were merely the most convenient limits to adopt.

Of the infants born in the "unfavorable" area as thus defined, four-fifths had foreign-born mothers, the largest group being the Portuguese white. Two-thirds of all the infants of Portuguese mothers were found in this area, three-fourths of all the infants of French-Canadian mothers, and seven-eighths of all those of Polish mothers.

Precincts 1, 2, and 3,[1] constituting ward 1,[1] lie along the Acushnet River at the northern end of the city. Practically every nationality represented in the city is found in this ward, including native Americans, French Canadians, Portuguese, Poles, English, Irish, Hebrews, Italians, Greeks, Turks, and Syrians. Of one section of this ward it was said that "one hears no English spoken on the streets here; the French-Canadian children play in the French language and the Portuguese children in Portuguese." Sixty-eight per cent of the infants of French-Canadian mothers in the study lived in ward 1,[1] also 76 per cent of the infants of Polish mothers, and nearly 25 per cent of the infants of Portuguese mothers. A long-established French-Canadian colony was located in this ward. This group of families had its separate business center and its own local French-Canadian churches, parochial schools, doctors, and midwives. The families of this group were generally living in modest but comfortable and well-kept homes; many were attempting to purchase their own homes. The largest Polish group of the city also is located in this ward; most of these families worked in the mills, although a number were engaged in small businesses, such as grocery stores, saloons, or lunch rooms. Many of the Polish women took in boarders on the basis of $2.50 or $3 a month each for sleeping space and the services of the landlady as cook and laundress. A day nursery for babies whose parents worked in the mill was maintained in the neighborhood and was largely patronized by Polish women. The ward was almost entirely populated by working people, largely cotton-mill operatives.

The majority of the families lived in two- to six-family frame tenement buildings; the three-family buildings predominated. Single-family cottages were rare. In one section of the ward a number of old and gloomy corporation houses were well filled. On business

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[1] Wards and precincts according to ward and precinct lines existing at the time of the study.

air, with stores on the ground
uncommon. At the time of
d averaged from $2 to $4.25 a
rally with a toilet, which, how-
but in the entry or cellar.
he entire colony of Portuguese
pe Verde Islands, also 17 per cent
d in this study, and a large Jewish
of the city; the two-family house
he one-family house was sometimes
ith the changes of the population in
ive-American families left, their one-
er into two- and three-family dwellings
ach family having one floor.
st distinct sections: The one bordering
habited almost entirely by Portuguese,
and in the other, the newer part, extending
mber of French Canadians, a few English,
uguese. Mill work was the most common
and also many of the women worked in the
the Portuguese were fishermen, generally
mothers in the Portuguese colony spoke
f mill blocks were located in this district; they
repair, with no attempt by builder, owner, or
attractive.[2] The predominating type of house
tenement; some had been remodeled from older,
omes. As a rule toilets were located in the entry

le area included most of the colonies of the different
ities and most of the bad living conditions in the
abitants of these districts were predominantly mill
of the women were gainfully employed. In the later
ffect of factors suggested by the description of these
ill be discussed in detail.[3]

NATIO Y.

ation of l in 19 er cent were
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foreign-born population, and the latter 22 per cent. The Portuguese ranked next in number, comprising 9 per cent of the foreign born. The other groups were smaller in number. It was interesting to note how the groups kept themselves together in compact colonies, each speaking its own language. The French-Canadian and the Portuguese groups were located in the so-called "unfavorable" area. Besides these may be noted a group of Italians who lived near the river north of the center of the town, between the railroad station and the mills, and a small colony of Greeks who were settled near the river to the north of the Italian colony.

The industrial development of New Bedford played a large part in determining the character of the foreign-born population. During the days of the prosperity of the whaling industry, prior to 1880, a number of Portuguese immigrants came from the Azores and gradually formed a permanent colony which at the time of the study was the most important Portuguese center in the United States. The growth of the textile industry proved a great attractive force for immigration. When the cotton mills were established many skilled English workers were brought to New Bedford. Later, with the introduction of new machinery, French Canadians came in response to the demand for unskilled labor; these were followed by a Polish immigration and more recently by large numbers of Portuguese.

Each nationality group has its own peculiar customs of infant feeding and of infant care, its superstitions and its preferences in the employment of physicians or midwives. In many cases the infant mortality rate for a particular nationality may be influenced by the conditions of the different sections of the city in which the group lives. The infant mortality rates according to nationality of the mother are shown in Table III.

TABLE III.—*Births during selected year, infant deaths, infant mortality rate, and per cent of stillbirths, according to nationality of mother.*

Nationality of mother.	Total births.	Live births.	Infant deaths.	Infant mortality rate.[a]	Stillbirths.	
					Number.	Per cent of total births.[a]
All mothers	2,662	2,587	337	130.3	75	2.8
Native mothers	753	729	79	108.4	24	3.2
Foreign-born mothers	1,909	1,858	258	138.9	51	2.7
Portuguese white	685	667	134	200.9	18	2.6
French Canadian	415	407	47	115.5	8	1.9
English	226	218	22	100.9	8	3.5
Polish	223	217	26	119.8	6	2.7
Portuguese Negro	76	71	7	....	5	....
Irish, Scotch, and Welsh	70	68	3	....	2	....
Jewish	60	59	4	....	1	....
Canadian	27	27	2	....	....	....
All other	126	124	13	104.8	2	1.6
Not reported	1	....	....	....	1	....

[a] Not shown where base is less than 100.

The highest infant mortality rate was 200.9 for the Portuguese white. This group was by far the largest of the foreign nationality groups represented among the births in the study, having 36 per cent of all the infants of foreign-born mothers included.

The Poles also had a relatively high rate of 119.8; they constituted one of the smaller groups. The French-Canadian group was second in size and showed a mortality of 115.5, a rate in sharp contrast to the figure of 224.7 found for infants of French-Canadian mothers in Manchester. The difference in these figures is the more difficult to explain, since both cities are textile centers and in both a large proportion of the French-Canadian mothers worked in the mills. The New Bedford group represented an earlier immigration, and therefore many have already adopted American customs.

The English formed the group next in size, with an infant mortality rate of 100.9. The rate for the British and Irish group, that is the English, Irish, Scotch, and Welsh combined, was 87.4.

It appears from this analysis of infant mortality rates by nationality that the highest rates were found in certain foreign-born groups and especially among the Portuguese. The greater part of the Portuguese in New Bedford were of recent immigration; a large number came from the Azores; more recently some have come from Lisbon and other places in Portugal. The small number of Portuguese who came to New Bedford during the days when the city was the center for the whaling industry had become part of the community, their children and grandchildren taking an active part in the life of the city.

There was also a group of Portuguese Negroes, commonly known as "Bravas," taking this name from the island of Brava of the Cape Verde group, from which most of them came.

Other studies of infant mortality have shown high rates for the Portuguese. For example, the study made by Dr. Louis I. Dublin in Fall River[1] showed an infant mortality rate for this group of 299, in contrast with the rate of 153 for infants of native mothers, of 172 for infants of Canadian mothers, and of 200 for all others.

The question arises in this connection whether the differences in rates for the different nationalities were due to differences affecting the baby before birth, care of the baby, methods of feeding, or the economic and social conditions of life. The importance of these several factors will be pointed out in the subsequent analysis.

LENGTH OF RESIDENCE IN THE UNITED STATES.

The length of residence of the mothers in this country may influence infant mortality rates because of gradual adoption of American customs or of gradual betterment of economic position. In General

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[1] Dublin, Louis I. Infant mortality in Fall River, Mass.: A survey of the mortality among 833 infants born in June, July, and August, 1913. American Statistical Association, June, 1915.

Table 2 the infants of foreign-born mothers are classified according to the number of years the mother had lived in this country. For the Portuguese-white group the infant mortality rate decreased in a striking manner as the length of residence increased. Where the residence was less than three years, the infant mortality rate was 283, while the infants whose mothers had lived here from 12 to 15 years had a mortality rate of only 95. This difference according to length of residence, however, does not appear so marked for the infants of mothers of other foreign nationalities. For the other groups the rates fluctuate considerably; but here, too, the lowest rates were for the groups in which the mothers had resided from 12 to 15 years in this country.

LITERACY AND ABILITY TO SPEAK ENGLISH.

The proportion of illiterate mothers in this study was unusually high. Of the total of 2,662 births, 740 were to mothers who were illiterate. One in every four of the mothers in this study was unable to read or write in any language. The infant mortality rates for the two groups showed a wide difference; for the group of illiterate mothers it was 188, contrasted with 107 for infants whose mothers were literate. (See Table IV.)

TABLE IV.—*Births during selected year, infant deaths, infant mortality rate, and per cent of stillbirths, according to literacy of mother.*

Literacy of mother.[a]	Total births.	Live births.	Infant deaths.	Infant mortality rate.[b]	Stillbirths.	
					Number.	Per cent total of births.[b]
All mothers	2,662	2,587	337	130.3	75	2.8
Literate	1,910	1,858	199	107.1	52	2.7
Illiterate[c]	740	718	135	188.0	22	3.0
Not reported	12	11	3	....	1	....

[a] Persons who can read and write in any language are reported literate.
[b] Not shown where base is less than 100.
[c] Including 26 births to native mothers.

The proportion of mothers unable to speak English was greater than the proportion of mothers unable to read and write. Of the total number of births, 1,006, or 38 per cent, were to mothers who were unable to speak English. Eliminating the English-speaking nationalities, the infant mortality rate for the remainder of the foreign-born group was 149.5; for those infants whose mothers were able to speak English, 97.4, as against 180.4 for those whose mothers could not speak English. Among the Portuguese were 571 infants whose mothers were unable to speak English; for these the infant mortality rate was 224.8. For those whose mothers were able to speak English the mortality rate was only 82.9. Among the latter were included infants of mothers of the earlier immigration, among whom the processes of assimilation had progressed much further. (See Table V.)

In the French-Canadian group the infant mortality rate for those whose mothers could speak English was higher than for those who had non-English-speaking mothers, the rates being, respectively, 121.7 and 104.2. Among the other foreign born the rates were 70.9 and 127, respectively.

TABLE V.—*Births during selected year, infant deaths, infant mortality rate, and per cent of stillbirths, according to nationality of mother and her ability to speak English.*

Ability of mother to speak English and nationality of mother.	Total births.	Live births.	Infant deaths.	Infant mortality rate.[a]	Stillbirths.	
					Number.	Per cent of total births.[a]
All mothers	2,662	2,587	337	130.3	75	2.8
Able to speak English	1,655	1,605	159	99.1	50	3.0
Unable to speak English[b]	1,006	981	177	180.4	25	2.5
Not reported	1	1	1	......	......	......
Foreign-born mothers	1,909	1,858	258	138.9	51	2.7
English-speaking nationalities	323	313	27	86.3	10	3.1
Non-English-speaking nationalities	1,586	1,545	231	149.5	41	2.6
Able to speak English	601	585	57	97.4	16	2.7
Unable to speak English	984	959	173	180.4	25	2.5
Not reported	1	1	1	......	......	......
French-Canadian mothers	415	407	47	115.5	8	1.9
Able to speak English	268	263	32	121.7	5	1.9
Unable to speak English	147	144	15	104.2	3	2.0
Portuguese mothers[c]	761	738	141	191.1	23	3.0
Able to speak English	189	181	15	82.9	8	4.2
Unable to speak English	571	556	125	224.8	15	2.6
Not reported	1	1	1	......	......	......
Other foreign-born mothers	410	400	43	107.5	10	2.4
Able to speak English	144	141	10	70.9	3	2.1
Unable to speak English	266	259	33	127.4	7	2.6

[a] Not shown where base is less than 100.
[b] Including 22 births to native mothers.
[c] Including 76 births to Portuguese-Negro mothers, only 23 of whom were able to speak English.

Of the total births to illiterate foreign-born mothers, 584, or 79.3 per cent, were to mothers who could not speak English. These mothers were doubly handicapped; they were cut off from the sources of information open to literate mothers, and in a foreign country were forced to rely almost wholly upon the customs and traditions brought with them and upon whatever assistance they could gain from their countrymen. The infant mortality rate for the 566 liveborn infants in this group was 203. While these factors—illiteracy and inability to speak English—are perhaps not in every case associated with ignorance of the essentials of infant care, yet they make it difficult, if not impossible, for the mothers to take advantage of the medical and social resources of the community or of printed instructions as to the proper methods of caring for their infants.

CAUSE OF DEATH.

The immediate cause of death is certified by the physician who signs the death certificate. Frequently these causes, such as gastric and intestinal diseases or diseases peculiar to early infancy, offer clews to the ultimate causes, such as improper feeding, lack of care of the mother during pregnancy, employment of the mother, or means insufficient to provide proper care for the infant. Methods of prevention, to be effective, of course must take ultimate causes into account.

Most of the infant deaths can be grouped into three main classes, viz, gastric and intestinal diseases, respiratory diseases, and causes peculiar to early infancy. The first group—gastric and intestinal diseases—caused the greatest loss of life among infants in this study, being responsible for 37.1 per cent of the total deaths. Twenty-two per cent were from causes peculiar to early infancy, 21 per cent from the principal respiratory diseases, and the remaining 20 per cent were ascribed to malformations, epidemic diseases, diseases ill defined and unknown, and all other causes. (See Table VI.)

TABLE VI.[a]—*Number and per cent distribution of deaths among infants born in the selected year, by cause of death.*

Causes of death.	Infant deaths.	
	Number.	Per cent distribution.
All causes	337	100.0
Gastric and intestinal diseases	125	37.1
Respiratory diseases	72	21.4
Malformations	12	3.6
Early infancy	75	22.3
Premature birth	25	7.4
Congenital debility	40	11.9
Injuries at birth	10	3.0
Epidemic diseases	23	6.8
Diseases ill defined or unknown	7	2.1
All other causes	23	6.8

[a] General Table 3.

GASTRIC AND INTESTINAL DISEASES.

The large percentage of deaths from gastric and intestinal diseases, 37 per cent, was much higher than the percentages either for the State of Massachusetts or for the death-registration area[1] of the

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[1] General Table 4.

United States. In the State only 28 per cent of the infant deaths in 1913 and 1914 [1] were from this cause, while in the registration area the percentage was only 24.

It would be more significant to compare the infant mortality rates from different diseases. The mortality rates from gastric and intestinal diseases for cities studied by the Children's Bureau is shown in Table VII. It appears that both in Manchester and in New Bedford the infant mortality rates from gastric and intestinal diseases were unusually high, and relatively high in Johnstown, while for Brockton and Saginaw the rates were very low. The general infant mortality rates for Manchester, Johnstown, and New Bedford were also high. Where the conditions favored high mortality from gastric and intestinal diseases the general infant mortality rate appeared to be high also.

TABLE VII.—*Infant mortality rates for specified cities, by cause of death.*

Cause of death.	All cities.	New Bedford.	Johnstown.	Manchester.	Saginaw.	Brockton.
All causes	127.0	130.3	134.0	165.0	84.6	96.7
Gastric and intestinal diseases	37.8	48.3	32.8	63.3	8.2	12.4
Respiratory diseases	22.8	27.8	26.7	26.2	10.2	13.2
Malformations	5.3	4.6	3.4	9.0	4.1	5.0
Early infancy	35.5	29.0	39.6	39.6	37.7	37.2
Premature birth	12.9	9.7	14.4	14.7	12.2	16.5
Congenital debility	19.2	15.5	20.5	24.3	24.5	14.9
Injuries at birth	3.3	3.9	4.8	.6	1.0	5.8
Epidemic diseases	7.7	8.9	11.6	3.2	5.1	8.3
Diseases ill defined or unknown	5.0	2.7	7.5	7.0	4.1	5.0
All other causes	12.9	8.9	12.3	16.6	15.3	15.7

The analysis of the mortality rates for infants of native and of foreign mothers indicates that much of the difference in the rates is to be attributed to mortality from gastric and intestinal diseases. The rate from these causes for the former group was 31.6, as contrasted with 54.9 for the latter. The rate for the foreign-born group was thus almost one and three-fourths that for the native. The analysis by nationality shows that the Portuguese white with a rate of 101.9 were almost entirely responsible for this difference. In this group 1 baby in every 10 born alive died from these causes. For all other foreign born the rate was comparable with the rate for infants of native mothers—indeed, somewhat lower. In these groups only 1 death in every 35 live births occurred from these causes. (See Table VIII.)

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[1] The percentages were computed from the figures for 1913 and 1914, the years in which the deaths of nfants included in this study occurred.

TABLE VIII.[a]—*Mortality rates for infants of mothers of specified nationality, by cause of death.*

Cause of death.	Infant mortality rates.					
	All mothers.	Native mothers.	Foreign mothers.			
			Total.	Portuguese white.	French Canadian.	All other.
All causes	130.3	108.4	138.9	200.9	115.5	98.2
Gastric and intestinal diseases	48.3	31.6	54.9	101.9	29.5	28.1
Respiratory diseases	27.8	17.8	31.8	51.0	17.2	23.0
Malformations	4.6	6.9	3.8	1.5	7.4	3.8
Early infancy	29.0	32.9	27.4	21.0	41.8	25.5
Premature birth	9.7	9.6	9.7	1.5	24.6	8.9
Congenital debility	15.5	19.2	14.0	13.5	14.7	14.0
Injuries at birth	3.9	4.1	3.8	6.0	2.5	2.6
Epidemic diseases	8.9	4.1	10.8	15.0	7.4	8.9
Diseases ill defined or unknown	2.7	5.5	1.6	1.5	2.5	1.3
All other causes	8.9	9.6	8.6	9.0	9.8	7.7

[a] General Table 3.

The experience of many cities has proved that infant deaths from gastric and intestinal diseases are largely preventable. The high mortality from these diseases has been markedly reduced by making available to mothers, through the employment of public-health nurses and the establishment of infant-welfare centers, information as to proper methods of feeding and caring for babies; and by the improvement of the milk supply.

RESPIRATORY DISEASES.

In contrast with Brockton and Saginaw, New Bedford shows an unusually high infant mortality rate from respiratory diseases, though both Johnstown and Manchester had high rates. The rates among foreign born for this group of diseases were nearly twice as high as among native. The Portuguese had the highest rate, practically three times the rate for the native group.

CAUSES PECULIAR TO EARLY INFANCY.

The specific rate from causes peculiar to early infancy did not vary greatly in the different cities studied by the bureau, but it was somewhat lower in New Bedford than in any of the other cities.

The mortality from diseases of early infancy was higher in the native than in the foreign-born group, the rates being 32.9 and 27.4, respectively. Among the French Canadians the rate from diseases of early infancy was highest, 41.8. The rate among the Portuguese white was unusually low, only 21.

COMPARISON OF "UNFAVORABLE" AREA WITH THE REST OF THE CITY.

An analysis of the death rates from the different groups of causes for the "unfavorable" area and for the rest of the city shows the causes to which the excessive mortality of the selected precincts is

FANT MORTALITY RATES FROM SPECIFIED DISEASES AMONG INFANTS
/E AND FOREIGN-BORN MOTHERS, AND OF PORTUGUESE-WHITE MOTH
ARATELY.

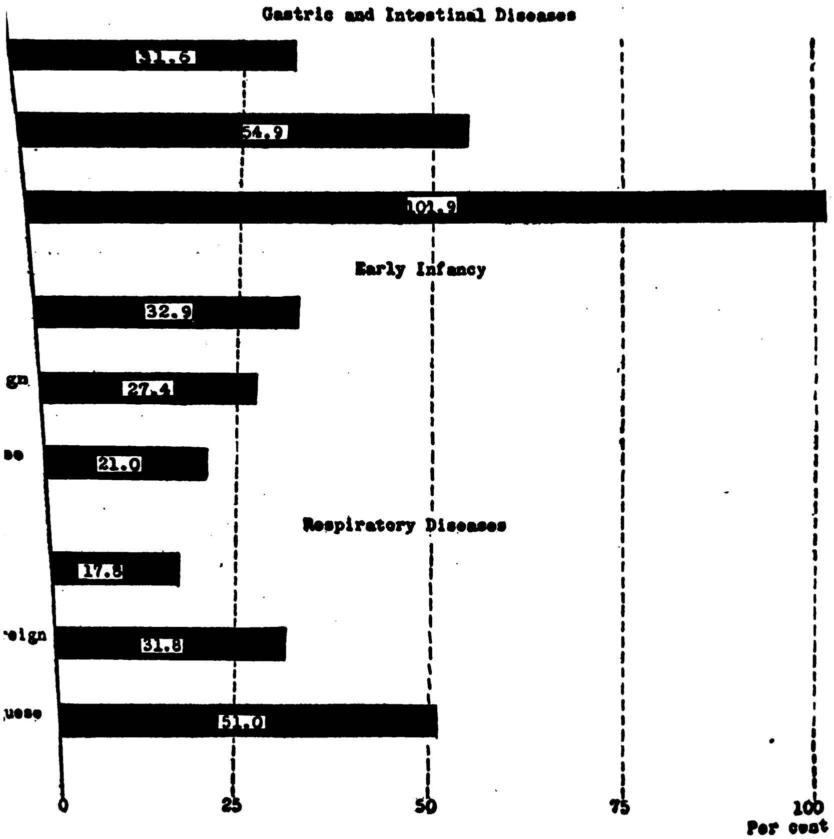

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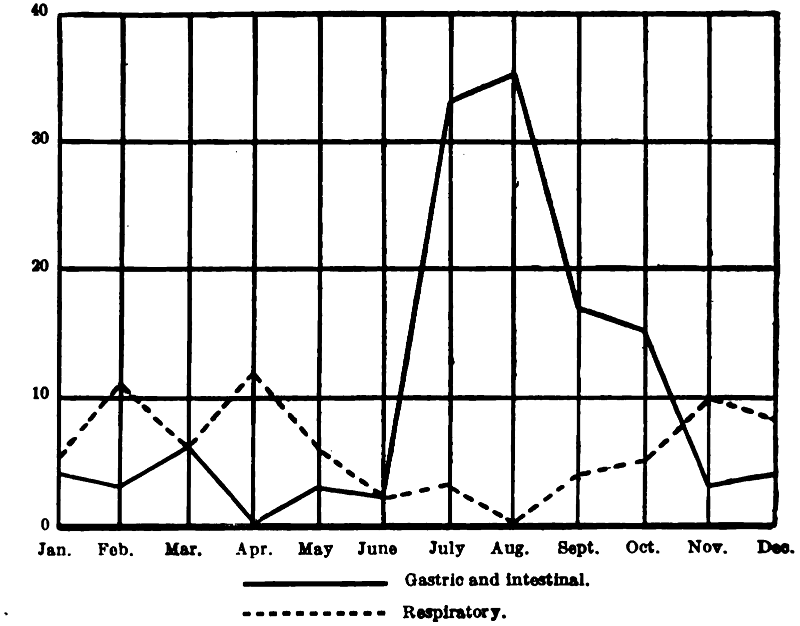
Chart II.—DEATHS FROM RESPIRATORY AND GASTRIC AND INTESTINAL DISEASES BY CALENDAR MONTHS.



to be attributed. The rate from causes peculiar to early infancy was approximately the same as for the rest of the city. The rates for both gastric and intestinal and respiratory diseases, however, were over twice as high as for the rest of the city. The causes of these unfavorable conditions must be sought in the kind of care given to the infants, in the kind of feeding, and also in part in the customs of the mothers, and in the surroundings in which they live. (See Table IX.)

TABLE IX.—*Deaths among infants born in selected year in and outside of "unfavorable" area, and infant mortality rates, by cause of death.*[a]

Cause of death.	Deaths among infants born in—			
	"Unfavorable" area.		Rest of city.	
	Number.	Infant mortality rate.	Number.	Infant mortality rate.
Total	233	156.6	104	94.6
Gastric and intestinal	95	63.8	30	27.3
Respiratory	54	36.3	18	16.4
Malformations	7	4.7	5	4.5
Early infancy	43	28.9	32	29.1
Epidemic diseases	17	11.4	6	5.5
Diseases ill defined or unknown	2	1.3	5	4.5
All other	15	10.1	8	7.3

[a] Derived from General Table 7.

CAUSE OF DEATH, BY CALENDAR MONTHS.

As uniformly observed in the earlier studies of infant mortality made by the bureau, there was a large increase of deaths from gastric and intestinal causes during the hot months, 68 per cent of these deaths occurring during July, August, and September. The deaths from respiratory diseases occurred chiefly during the winter months, although a few deaths from this cause occurred in every month except August. The number of deaths from gastric and intestinal diseases and from respiratory diseases by calendar month of death is shown in Chart II.[1]

AGE AT DEATH.

It is a well-known fact that in the early days of a baby's life the chances of survival are least. In the registration area, in 1913, 43 per cent of all infant deaths occurred under the age of 1 month.[2] The causes of death most frequent at this time are congenital debility, injuries at birth, and premature birth, which are usually grouped under the caption: "Causes peculiar to early infancy."

The relatively high percentage of deaths in New Bedford in the first few weeks of life is shown in Table X.

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[1] General Table 5.

[2] U. S. Bureau of the Census, Mortality Statistics, 1913.

TABLE X.—*Number and per cent distribution of deaths among infants born in selected year, by age at death.*

Age at death.	Infant deaths.	
	Number.	Per cent distribution.
All ages	337	100.0
Less than 1 month	102	30.3
Less than 1 day	41	12.2
1 day but less than 2	9	2.7
2 days but less than 3	4	1.2
3 days but less than 7	15	4.5
1 week but less than 2	15	4.5
2 weeks but less than 1 month	18	5.3
1 month but less than 2	32	9.5
2 months but less than 3	24	7.1
3 months but less than 6	79	23.4
6 months but less than 9	63	18.7
9 months but less than 12	37	11.0

A comparison between New Bedford and the cities previously studied by the Children's Bureau for percentage of deaths at various ages is presented in Table XI.

TABLE XI.—*Per cent distribution of deaths among infants born in specified cities during selected periods, by age at death.*

Age at death.	All cities.	New Bedford.	Johnstown.	Manchester.	Saginaw.	Brockton.
All ages	100.0	100.0	100.0	100.0	100.0	100.0
Less than 1 month	35.5	30.3	37.8	27.9	56.6	48.7
Less than 1 day	11.8	12.2	14.3	6.6	8.4	20.5
1 day but less than 2	2.9	2.7	1.0	2.3	12.0	1.7
2 days but less than 3	2.2	1.2	2.0	3.1	2.4	3.4
3 days but less than 7	5.8	4.5	5.6	5.8	8.4	7.7
1 week but less than 2	5.0	4.5	7.1	3.9	9.6	2.6
2 weeks but less than 1 month	7.8	5.3	7.7	6.2	15.7	12.8
1 month but less than 2	9.3	9.5	9.2	9.3	10.8	7.7
2 months but less than 3	7.8	7.1	8.2	9.3	3.6	8.5
3 months but less than 6	20.7	23.4	21.4	22.1	12.0	14.5
6 months but less than 9	16.2	18.7	15.8	19.0	7.2	10.3
9 months but less than 12	10.5	11.0	7.7	12.4	9.6	10.3

All the other cities shown had a higher mortality from causes peculiar to early infancy than New Bedford.

The percentages of deaths under 1 month of age for four cities—Manchester, Saginaw, Brockton, and New Bedford—are shown in Chart III.

The cities with large native populations had large percentages of deaths at early ages, while the cities with large foreign-born elements had relatively smaller percentages. In Saginaw, a city of predominantly native population, over half the infant deaths occurred under 1 month of age; Brockton, also with a large majority of native moth-

Chart III.—PERCENTAGE OF DEATHS UNDER 1 MONTH OF AGE IN THE FOUR CITIES SPECIFIED.

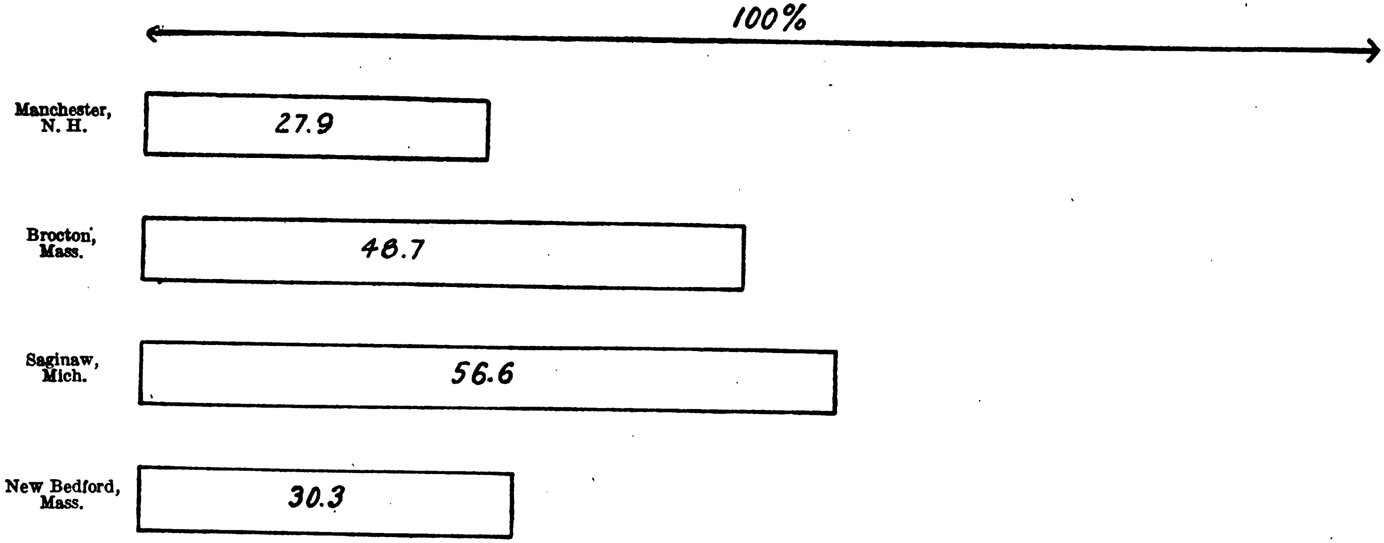
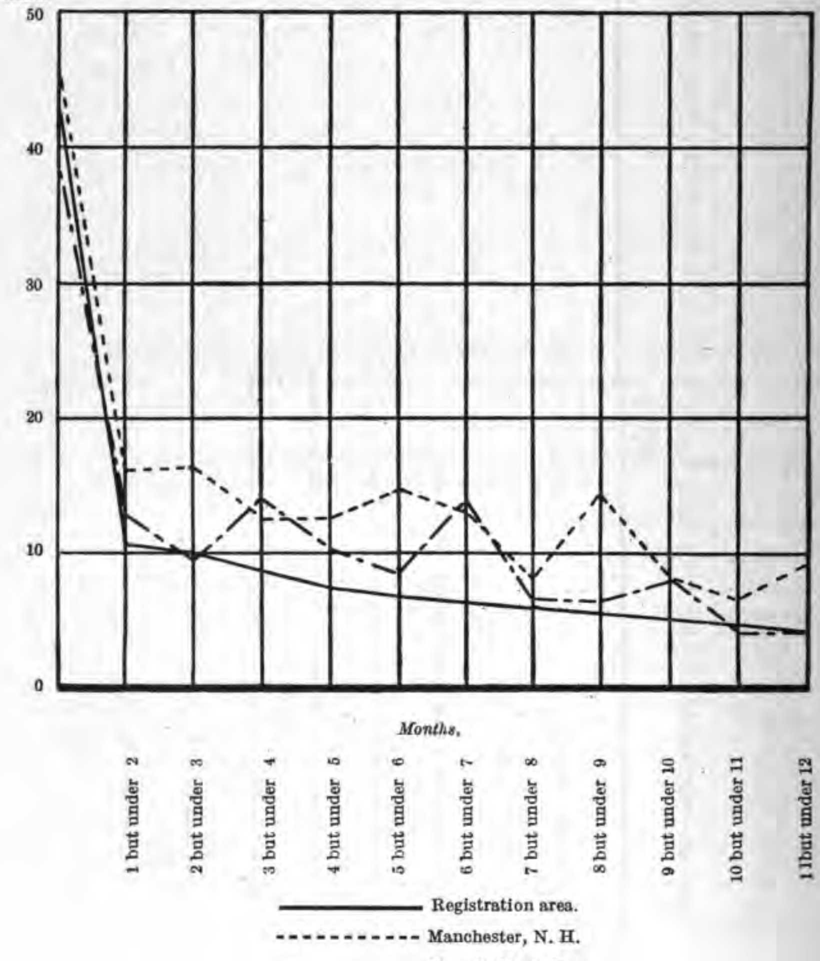


Chart IV.—RELATIVE MORTALITY DURING FIRST YEAR OF LIFE FOR MANCHESTER, NEW BEDFORD, AND THE REGISTRATION STATES IN 1910.



ers, had a high percentage of deaths in early infancy; Manchester, with a very large foreign population, had the lowest percentage of deaths under 1 month.

These percentages, of course, simply reflect the distribution of the causes of death; the heavy mortality from gastric and intestinal diseases in Manchester, for example, produces a high proportion of deaths late in infancy, since deaths from these diseases occur relatively late in the first year of life. But they do serve to indicate, also, the direction in which preventive work should be especially directed in the different cities. In the cities with large foreign-born populations, the most urgent need is for infant-welfare stations to teach proper care of babies during infancy; while in cities with preponderantly native population, the teaching of the essentials of prenatal care is relatively more important.

In the volume of United States Life Tables recently published by the Bureau of the Census, mortality rates are given for each month of life based on figures of deaths and births in the birth-registration area in 1910. These rates are for large groups and the curve of mortality was smoothed by mathematical processes. According to these figures the mortality rate shows a decline for each month from the first to the twelfth. The rates for New Bedford by months under 1 year show more fluctuation, due to the comparatively small numbers involved, but the tendency is the same as that in the curve for the registration area. The smooth curve given by the census figures and the irregular ones resulting from the New Bedford and Manchester figures are shown in Chart IV.

STILLBIRTHS.

A stillbirth in this study is defined as a dead-born issue, resulting from seven or more months' gestation. If the period of gestation was reported as less than seven months, the birth, even though registered as a stillbirth, was classed as a miscarriage and as such, excluded from the study.

The number of stillbirths included was 75, giving a stillbirth rate, in comparison to the total of 2,662 live and stillbirths, of 2.8 per cent.

COMPARISON WITH OTHER CITIES.

The cities previously studied by the Children's Bureau in its infant mortality investigations had considerably higher stillbirth rates, as shown in the following statement:

New Bedford	2.8
Brockton	3.0
Saginaw	3.3
Johnstown	4.5
Manchester	4.8

STILLBIRTH RATES AND NATIONALITY.

Native mothers had a larger proportion of stillbirths than foreig born mothers, the rates being, respectively, 3.2 and 2.7. For t racial groups large enough to be significant the highest rate was f the English, 3.5; the lowest for the French Canadian, only 1.9; t Portuguese white had a rate of 2.6.[1]

STILLBIRTH RATES AND OTHER FACTORS.

The stillbirth rate for males was somewhat in excess of that f females, the rates being 2.9 and 2.7, respectively. This excess f males was due to the comparatively high stillbirth rate of 4 for ma births to native mothers, while for female births in the same gro the rate was only 2.4.[2]

The stillbirth rate for first-born children (3.8) was higher th that for births of later order up to the seventh-born (5.5). For t fourth-born child the stillbirth rate (0.6) was almost negligible.[3]

High stillbirth rates were found for mothers under 20 years of a (3.6) and for mothers of 30-39 (3.7); for mothers of 40 and over, t rate was highest (6.7). In the other age groups the rates were rel tively low.[4]

Of the 152 twins and triplets born either during the selected ye or previously to the mothers included in the study, 15 were stillbirt giving a stillbirth rate of 9.9 per cent. This rate is very much high than the rate of 2.7 for single births.

SEX.

The number of male infants born in New Bedford during the s lected year was only slightly in excess of the number of female, t figures being 1,340 and 1,322, respectively. The infant mortali rate was somewhat greater for male than for female, 139.9 for ma as contrasted with 120.5 for female infants. (See Table XII.)

TABLE XII.—*Births during selected year, infant deaths, infant mortality rate, and cent of stillbirths, according to sex of infant and nativity of mother.*

Sex of infant and nativity of mother.	Total births.	Live births.	Infant deaths.	Infant mortality rate.	Stillbirths.	
					Number.	Per ce of tot births
All mothers	2,662	2,587	337	130.3	75	
Male	1,340	1,301	182	139.9	39	
Female	1,322	1,286	155	120.5	36	
Native mothers	753	729	79	108.4	24	
Male	376	361	41	113.6	15	
Female	377	368	38	103.3	9	
Foreign-born mothers	1,909	1,858	258	138.9	51	
Male	964	940	141	150.0	24	
Female	945	918	117	127.5	27	

[1] See Table III, p. 18. [2] See Table XII. [3] See Table XIV. [4] See Table XI.

AGE OF MOTHER.

The infant mortality rate for the infants of mothers aged 25 to 29 at the time of the baby's birth was the lowest for any age group—114. The infants of mothers under 20 had the extremely high rate of 259.3. A large proportion of first births among these births to young mothers may influence the rate, coupled with the fact that the mortality among second and third births that occur to mothers below the age of 20 years is likely to be excessive on account of too short intervals between the successive births. The largest number of births was to mothers in the age group 25 to 29, for which the mortality rate was lowest. (See Table XIII.)

TABLE XIII.—*Births during selected year, infant deaths, infant mortality rate, and per cent of stillbirths, according to age of mother at birth of infant.*

Age of mother.	Total births.	Live births.	Infant deaths.	Infant mortality rate.	Stillbirths.	
					Number	Per cent of total births.
All mothers	2,662	2,587	337	130.3	75	2.8
Under 20	112	108	28	259.3	4	3.6
20 to 24	737	725	93	128.3	12	1.6
25 to 29	853	833	95	114.0	20	2.3
30 to 39	840	809	105	129.8	31	3.7
40 and over	120	112	16	142.9	8	6.7

ORDER OF BIRTH.

Another physical factor which undoubtedly influences infant mortality is the order of birth. According to the results of this study the third child had the best chance of survival and the second the next best chance. The infant mortality rate for first and fourth born children was comparatively high, and the rates for sixth, seventh, and later born children were very high.

The infant mortality rate for first-born children of native mothers was comparatively low—only 81—while that for first-born children of foreign-born mothers was 166.2.

TABLE XIV.—*Births during selected year, infant deaths, infant mortality rate, and per cent of stillbirths, according to number in order of birth.*

Number in order of birth.	Total births.	Live births.	Infant deaths.	Infant mortality rate.	Stillbirths.	
					Total.	Per cent of total births.
All mothers	2,662	2,587	337	130.3	75	2.8
First	638	614	81	131.9	24	3.8
Second	542	531	58	109.2	11	2.0
Third	416	407	42	103.2	9	2.2
Fourth	338	336	45	133.9	2	0.6
Fifth	218	212	24	113.2	6	2.8
Sixth	141	138	23	166.7	3	2.1
Seventh	109	103	17	165.0	6	5.5
Eighth and later	260	246	47	191.1	14	5.4

PLURAL BIRTHS.

Mothers of the infants born in the selected year had, including birt previous to the selected year, a total of 9,340 births.[1] Among th were 152 twins and triplets—73 sets of twins and 2 sets of triple One in every 61 births was a plural birth. A classification of plu births according to age of mother indicates that the older moth were more likely to have plural births than the younger mothers. T per cent of infants who were twins and triplets among the total infa born to mothers of the various age groups increased from less tha per cent for mothers under 20 to 6 per cent for mothers over 40.

Among these plural births were 137 live-born twins and triple nearly half these (68) died during the first year of life, giving an fant mortality rate for plural births of 496.4. The mortality r among plural births was between three and four times as high among single births.

ATTENDANCE AT BIRTH.

Physicians were in attendance at 72.7 per cent of the births of fants included in the New Bedford study; midwives in 23.1 per ce and relatives, friends, or neighbors in the remaining cases, 4.2 cent. Of the confinements attended by physicians 115, or 4.3 per ce occurred in hospitals. Foreign-born mothers employed midwives t much greater extent than native mothers, influenced perhaps by t customs of the Old World countries from which they came, where mi wives are more commonly employed. (See Table XV.)

TABLE XV.—*Number and per cent distribution of births in selected year to mothers of sp fied nativity, according to attendant at birth.*

Attendant at birth.	Total births.		Births to native mothers.		Births to foreig born mothers.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per ce distril tion
All classes	2,662	100.0	753	100.0	1,909	10
Physician	1,934	72.7	698	92.7	1,236	6
Midwife	615	23.1	42	5.6	573	3
Other, none, or not reported	113	4.2	13	1.7	100	

In the foreign-born group 30 per cent of the births were to mothe employing midwives in confinement, while in the native group on 5.6 per cent were to mothers having the same kind of attenda In Waterbury, where there was a large proportion of foreign-bo mothers, 43.4 per cent of the births to foreign-born mothers were those employing midwives; while in Manchester, where the predominating foreign element was French Canadian, the percentage of births to foreign-born mothers having midwives was only 13.6 per cent of all births to foreign-born mothers.

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[1] General Table 12.

In New Bedford the racial group which had the largest percentage of births attended by midwives was the Portuguese white, with 56.8 per cent; then followed in order the Portuguese Negro, with little over one-half; the Polish, slightly less than one-half; the English, with about 11 per cent; the Irish, Scotch, and Welsh, the Jewish, and the French Canadian with percentages practically negligible. The last group had only 2 births attended by midwives out of a total of 415.

The reason for the employment of midwives by the non-English-speaking mothers was not, as might be supposed at first thought, solely the desire to have an attendant who spoke their language, for in each of the three large foreign groups—the Portuguese, the French Canadian, and the Polish—were physicians of the same nationality. Though many foreign-born mothers did avail themselves of the services of a physician of their own race, the preference of a large proportion of mothers was for the midwife. This preference in many cases was due partly to the lower charge made by the midwife, partly to her practice of giving nursing care and assisting at the housework, but it was due also to the traditions of the nationality group.

INFANT MORTALITY RATES, BY ATTENDANT AT BIRTH.

The infant mortality rate for infants of mothers who were attended by midwives was 169.1; for infants whose mothers were attended at confinement by physicians, 115.5. Of the latter group, infants of mothers attended at home by physicians died at the rate of 117.9, while for those whose mothers had hospital care at confinement the rate was only 75.5.

HOSPITAL FACILITIES.

The hospital facilities for obstetrical cases in New Bedford consisted of four hospitals. The largest hospital had free wards accommodating 19 maternity cases; of course private rooms were to be had, but they were out of the question for the majority of New Bedford mothers, most of whom belonged to mill workers' families. The other hospitals had accommodations for about 12 maternity cases each. For a city the size of New Bedford the free hospital facilities available were entirely inadequate according to modern health standards.

MIDWIVES.

The Massachusetts law ignores the existence of midwives, except in requiring the return of birth certificates for births attended by them.[1] At the time this study was made more than 20 midwives were practicing in New Bedford. The following excerpt from "Midwives in Massachusetts,"[1] a study made in 1909, would doubtless have described the situation in 1913, though of course the number practicing in the later year was somewhat larger:

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[1] Laws of 1912, ch. 280, secs. 1 and 2.

> In New Bedford we find 12 women all over 40 years of age and three-fourths of them over 50 years of age, more than half of them illiterate and all but 1 without any obstetrical education. All of these women rendered rather more service to the mother than would have been given by a physician. Additional information showed that only 5 of these women were caring for more than 50 cases a year, while only 3 cared for 150 as a maximum. Their fees ranged from $2 a case to $10 a week.

OTHER OR NO ATTENDANT.

One hundred and thirteen of the births in this study occurred without attendance of either doctor or midwife. Five of these were stillbirths. Thirteen of the births were to native mothers and 100 to foreign-born mothers. The attendant in 80 of these cases was the husband, some other relative, a friend, or a neighbor; 32 had no attendant, and in 1 case the attendant was not reported.

PREVENTION OF OPHTHALMIA NEONATORUM.

On account of the danger of ophthalmia neonatorum resulting from unskilled care of the baby at birth, cases of swollen, red, or inflamed eyelids of newly born infants were required by law to be reported to the board of health. The municipal nurse would be sent to cases thus reported and, if necessary, an oculist employed by the board of health visited the case. Since the law became operative and the board assumed the responsibility of caring for these infants, the oculist employed by the board has not lost a single case.[2]

On account of the large number of Portuguese immigrants a Portuguese-speaking nurse was employed by the board of health.

FEEDING.

The kind of feeding an infant receives during the early months of his life is of great importance in determining his chance of survival. Authorities are agreed that mother's milk is the best food for infants. Not only is artificial feeding dangerous to the life and health of the infant, but differences in the methods of artificial feeding, in the cleanliness of the milk, and in the care exercised in the preparation of the food also affect the mortality rate. Artificial feeding with clean milk properly modified to meet the requirements of the individual baby is not so harmful to the young infant as artificial feeding with milk not so modified.

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[1] Huntington, J. L., M. D.: "Midwives in Massachusetts," in Boston Medical and Surgical Journal, Vol. CLXVII, No. 16, pp. 542-548.

[2] In 1916 the oculist was made a regular officer of the board of health and paid for full-time work. Previously he had been employed when necessary and compensated by fees.

National and traditional customs and the gainful employment of the mother influence the type of feeding; ignorance plays a large part in the lack of care taken in the preparaion of artificial food. Nor is the ill effect of improper food confined entirely to a higher infant mortality rate. The rate is an index of the general health and welfare of the children; the infants artificially fed who live may not be physically as strong as if they had been breast fed.

PROPORTIONS BREAST FED AND ARTIFICIALLY FED.

Of the group of 2,587 live-born infants, 60 died before being fed; 322, or 12.7 per cent of the 2,527 babies who lived to be fed, were artificially fed in the first month. The proportion of infants exclusively breast fed in the first month, 83.8 per cent, gradually decreased from month to month, as a larger and larger number were fed wholly or partly with artificial food. The shift in the proportions is shown in Table XVI. By the middle of the fifth month of life, about one-half the infants were given breast milk exclusively; in the ninth month only about one-fourth continued to be breast fed. The proportion mixed fed, that is, receiving some breast milk in addition to artificial food, gradually increased until it reached one-fourth in the eighth and ninth month. In the ninth month not quite half the babies were receiving artificial food exclusively.[1]

TABLE XVI.—*Infants born in selected year and surviving at end of specified month, and number and per cent fed in specified way during the month, by month of life.*

Month of life.	Total survivors.	Breast fed.		Mixed fed.		Artificially fed.		Not reported.
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	
First	2,485	2,082	83.8	96	3.9	306	12.3	1
Second	2,453	1,833	74.7	152	6.2	467	19.0	1
Third	2,429	1,602	66.0	226	9.3	600	24.7	1
Fourth	2,395	1,354	56.5	305	12.7	735	30.7	1
Fifth	2,370	1,210	51.1	351	14.8	808	34.1	1
Sixth	2,350	1,054	44.9	422	18.0	873	37.1	1
Seventh	2,317	832	35.9	539	23.3	945	40.8	1
Eighth	2,302	716	31.1	587	25.5	998	43.4	1
Ninth	2,287	594	26.0	623	27.2	1,069	46.7	1

FEEDING CUSTOMS AND NATIONALITY OF MOTHER.

A comparison of type of feeding by nativity of mother shows that exclusive breast feeding was slightly more prevalent among foreign-born mothers. In the first month 85.2 per cent of the infants of foreign-born mothers were breast fed as contrasted with only 80.1 per cent in the native group. The difference gradually diminishes, until after the sixth month it is negligible. However, the percentage of infants receiving mixed feeding was considerably higher among the foreign-born group than among the native group at 3, 6, and 9 months of age.

A much smaller percentage of the infants of Portuguese-white mothers than of other foreign nationalities was breast fed, smaller even than of the infants of native mothers. The Portuguese contributed the largest proportion of mixed-fed infants; in this nationality group the percentage mixed-fed at the third month was 16.2, while for other foreign it was 7.7, and for infants of native mothers, 5.8. At the sixth month the percentages became, respectively, 22.5, 18.7, and 12.7.[1]

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[1] The relation between type of feeding and gainful employment of the mother is discussed later, pp. 45–46.

If the percentages of both mixed and artificially fed infants are added together, giving the total proportion of infants who received artificial feeding in whole or in part, the Portuguese head the list with 39.9 per cent receiving some artificial feeding in the third month as against 28.5 per cent of infants of other foreign-born mothers and 37.7 per cent of infants of native mothers. In the sixth month, the percentages were 60.2, 52.2, and 55.4, respectively. In the ninth month, which is the customary time for weaning, the difference in this respect between Portuguese and other foreign born was negligible.

INFANT MORTALITY RATES, BY TYPE OF FEEDING.

The difference in mortality of breast-fed and artificially fed infants can be most clearly shown by contrasting the death rates in each month of life. As already pointed out, the mortality gradually declines as the infants grow older; but in each month of life there is a great difference in favor of the breast-fed infants. The death rate for the artificially fed in the first three months was over four times that for the breast-fed infants, with an even greater difference from the fifth to the seventh months; after the seventh, the relative difference was not so great, being only two or three times the mortality among infants receiving breast milk. These figures indicate clearly the superiority of breast feeding. (See Table XVII.)

TABLE XVII.—*Deaths in each month per 1,000 survivors at beginning of month and monthly death rates per 1,000 infants fed in specified way, by month of life.*[a]

Month of life.	Deaths in month per 1,000 survivors at beginning of month.	Deaths in month per 1,000 infants—			
		Breast fed.	Artificially fed.		
			Total.	Native mothers.	Foreign-born mothers.
First	[b] 39.4	11.4	49.7	24.0	66.0
Second	12.9	7.0	29.1	22.2	33.2
Third	9.8	4.4	26.0	13.5	33.0
Fourth	14.0	5.9	26.5	34.4	22.3
Fifth	10.4	3.3	24.2	18.1	27.2
Sixth	8.4	1.9	15.8	13.8	16.7
Seventh	14.0	1.2	23.8	16.0	27.5
Eighth	6.5	4.2	9.9	3.0	13.3
Ninth	6.5	3.4	10.2	....	15.1
Tenth to twelfth (average)	5.4	2.2	7.5	6.6	7.9

[a] Derived from General Table 16.

[b] The rate given is per 1,000 live births. The rate per 1,000 infants who lived to be fed was 16.6. Sixty infants died not fed.

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[1] General Table 15.

The difference between the mortality of breast-fed and artificially fed infants can be summed up in the following computation: If 1,000 infants who lived to be fed are assumed to have been breast fed throughout the first year of life, and the monthly death rates for breast-fed babies are applied successively to the survivors in each month, the infant mortality rate (per 1,000 infants who lived to be fed) would be 48.3. A similar computation for artificially fed would give a rate of 214.2, four and one-half times as great.

The differences in rates for the artificially fed of the different nativity groups is almost as striking as the difference in rates between the breast and the artificially fed. There are many different types of artificial feeding; the mother who gives her baby modified milk in accordance with a physician's prescription, and who observes carefully all the rules for cleanliness and sterilization, is classed as giving artificial feeding as well as the mother who is ignorant of the necessity of providing pure, clean milk or who gives her baby condensed milk, solid food, coffee, or tea. The contrast is well illustrated in the following descriptions of the feeding of two infants, both classed as artificially fed. When Baby A cried, his milk bottle was picked up from the dirty floor, partly filled with condensed milk from the can, then placed under the faucet and filled up with water. The nipple was also recovered from the floor, and Baby A was fed. For Baby B the bottles were kept sterilized; the milk, the best obtainable, was modified in accordance with a physician's directions and the ingredients of the formula were carefully measured; the temperature was properly regulated. Baby B was fed at regular intervals; he was seen at least once a week by a doctor, and the milk formula was changed when necessary. Both these babies were "artificially fed."

The contrast in the death rates for artificially fed infants of native and of foreign-born mothers is due probably in large part to differences in the method of feeding such as have been described. The rate for the foreign born is largely influenced by the heavy mortality among the babies of Portuguese white mothers, so large a proportion of whom were both illiterate and unable to speak English. As already pointed out, a larger percentage of infants in the Portuguese group was artificially fed throughout the first nine months than of infants in the remainder of the foreign group. Yet the native mother, in even a larger proportion of instances than the Portuguese mother, fed her baby artificially, while the death rate, though much higher than the rate for the breast-fed infants, was considerably lower than for the babies of the Portuguese mothers.

By applying the rates in each group to 1,000 infants who lived long enough to be fed, an infant mortality rate of 153.2 for artificially fed infants of native mothers can be contrasted with a rate of 247.1 for artificially fed infants of foreign-born mothers. With the same type of feeding, the infants of foreign-born mothers died at a rate one and one-half times as great as that for the infants of the native group.

FEEDING IN RELATION TO CAUSE OF DEATH.

The large percentage of infants artificially fed, in whole or in part, among the Portuguese group probably accounts for the very large proportion of deaths from gastric and intestinal causes among these infants.

It was noted in an earlier section of the report that the mortality in New Bedford from gastric and intestinal causes was exceedingly high, and that over half the deaths among the infants of Portuguese mothers were from this cause.

ECONOMIC FACTORS.

The chief product of manufacture in New Bedford was cotton textiles. In this industry were many occupations requiring unskilled and semiskilled labor, and wages were generally low. Besides the cotton mills, which at the time of the study numbered over 30, there were the large establishments of a drill and machine company, a shoe factory, a silverware and glass factory, a cordage company, and a biscuit factory. In addition were several smaller factories manufacturing copper rolls, silks, ropes, lines, iron and brass screws, and sperm and whale oils.

OCCUPATION OF FATHER.

The commercial and industrial character of New Bedford is well illustrated in Table XVIII, which classifies births according to the industry in which the father was employed. Comparatively few fathers were engaged in trade, transportation, or clerical and professional service, while approximately 65 per cent were in manufacturing and mechanical industries, including 41 per cent in cotton mills alone.

TABLE XVIII.—*Births in selected year, according to industry or occupation of father.*

Industry or occupation of father.	Births.
All classes	2,662
Manufacturing and mechanical industries	1,730
Cotton mills	1,091
Other than cotton mills	639
Trade	354
Transportation	178
Domestic and personal service	120
Public service	83
Agriculture, fishing, and mining	73
Clerical occupations (all industries)	55
Professional and semiprofessional pursuits	33
Not reported [a]	36

[a] No report on occupation for following reasons: In one instance the father lived on his income; in 35 instances the father did not contribute to the support of the family—including 22 cases in which the father had deserted, 6 in which the father was dead, 5 in which the father was unable to work on account of sickness, the father of one baby was a student, and in one case the reason was not reported.

BASIS OF CLASSIFICATION.

By "father's earnings" is meant the amount actually earned by the father during the year following the birth of the infant. These amounts, therefore, do not represent wage rates, since loss of time due to sickness, slack work, or unemployment was always deducted.

Father's earnings were used as the basis of classifying the families according to economic status. This plan was simpler and was deemed more accurate and satisfactory than an attempt to classify families by the total income which they had received, as this income was sometimes made up not only of earnings but also of receipts from dividends, property, and other investments, from boarders, lodgers, and other sources. The gross income from boarders and lodgers was of course always reported, but it was practically impossible to compute the net income accurately in these cases. The net income from property—that is, the gross income less interest, taxes, insurance, repairs, etc.—was practically always unknown to the mother, who is usually the person who gives the information. In the majority of families the earnings of the fathers determine their economic status. Further, it is easier to secure a correct statement for the father's earnings than for any of the other items which make up income; it was decided, therefore, to adopt as the basis for classification the actual amount earned by the father during the year following the birth of the infant; it is believed that this amount is a sound index of the relative economic position of the family.

DISTRIBUTION OF ECONOMIC GROUPS.

Three-fourths of the infants in this study were in families where the father earned less than $850 a year. The largest single group of births was that in which the father earned between $650 and $849. The births in this group constituted 24 per cent of the total number. (See Table XIX.) Among the factory operatives and laborers the largest single group was that in which the father earned less than $450 a year.[1] The industrial character of the city and the low scale of wages prevailing are emphasized in these figures. Between 6 and 7 per cent had fathers earning $1,250 and over. This latter group included, of course, all fathers who were in professional or highly paid commercial pursuits as well as fathers whose salaries were only slightly over $1,250.

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[1] General Table 18.

TABLE XIX.—*Number and per cent distribution of births during selected year to mothers of specified nativity, according to earnings of father.*

Earnings of father.	All mothers.		Native mothers.		Foreign-born mothers.	
	Total births.	Per cent distribution.	Births.	Per cent distribution.	Births.	Per cent distribution.
All classes	2,662	100.0	753	100.0	1,909	100.0
Under $450	551	20.7	60	8.0	491	25.7
$450 to $549	453	17.0	67	8.9	386	20.2
$550 to $649	387	14.5	107	14.2	280	14.7
$650 to $849	625	23.5	194	25.8	431	22.6
$850 to $1,049	308	11.6	146	19.4	162	8.5
$1,050 to $1,249	85	3.2	44	5.8	41	2.1
$1,250 and over	173	6.5	102	13.5	71	3.7
No earnings	36	1.4	17	2.3	19	1.0
Not reported	44	1.7	16	2.1	28	1.5

ECONOMIC STATUS AND NATIVITY OF MOTHER.

The economic status of families with native-born mothers was in general higher than of those with foreign-born mothers. Seventeen per cent of births to the native mothers were in families where the fathers earned less than $550, while 46 per cent of the births to foreign-born mothers belonged in this class. The modal group for native mothers was the one in which the father earned between $650 and $849, while the corresponding group for foreign-born mothers was that in which the father earned less than $450 a year. (See Table XIX.)

INFANT MORTALITY RATES ACCORDING TO FATHER'S EARNINGS.

In Table XX infant mortality rates for the different groups classified according to earnings of the father are given. The infant mortality rates decreased progressively for the higher earnings group, with a single irregularity in group $850 to $1,049, reaching the low point of 59.9 for babies whose fathers earned $1,250 or over. The lowest earnings group, that under $450, comprising over one-fifth of all births, had an infant mortality rate of 201.9. In the families of the very poor, 20 babies out of every 100 born alive died before reaching their first birthday. In the group earning $1,250 or over, only 6 out of every 100 babies born alive died under 1 year of age.

TABLE XX.—*Births in selected year, infant deaths, infant mortality rate, and per cent of stillbirths, according to earnings of father and nativity of mother.*

Earnings of father and nativity of mother.	Total births.	Live births.	Infant deaths.	Infant mortality rate.[a]	Stillbirths.	
					Number.	Per cent of total births.[a]
All mothers	2,662	2,587	337	130.3	75	2.8
Under $450	551	530	107	201.9	21	3.8
$450 to $549	453	442	57	129.0	11	2.4
$550 to $649	387	380	44	115.8	7	1.8
$650 to $849	625	610	60	98.4	15	2.4
$850 to $1,049	308	297	40	134.7	11	3.6
$1,050 to $1,249	85	84	5	....	1	....
$1,250 and over	173	167	10	59.9	6	3.5
No earnings	36	34	8	....	2	....
No report	44	43	6	....	1	....
Native mothers	753	729	79	108.4	24	3.2
Under $450	60	56	11	....	4	....
$450 to $549	67	65	7	....	2	....
$550 to $649	107	106	14	132.1	1	0.9
$650 to $849	194	187	19	101.6	7	3.6
$850 to $1,049	146	141	16	113.5	5	3.4
$1,050 to $1,249	44	43	1	....	1	....
$1,250 and over	102	98	5	....	4	3.9
No earnings	17	17	4	....	....	....
No report	16	16	2	....	....	....
Foreign-born mothers	1,909	1,858	258	138.9	51	2.7
Under $450	491	474	96	202.5	17	3.5
$450 to $549	386	377	50	132.6	9	2.3
$550 to $649	280	274	30	109.5	6	2.1
$650 to $849	431	423	41	96.9	8	1.9
$850 to $1,049	162	156	24	153.8	6	3.7
$1,050 to $1,249	41	41	4	....	....	....
$1,250 and over	71	69	5	....	2	....
No earnings	19	17	4	....	2	....
No report	28	27	4	....	1	....

[a] Not shown where base is less than 100.

This decline in infant mortality rates as the father's earnings increase is not peculiar to New Bedford. Chart V shows graphs for three cities studied by the bureau. In each city—Manchester, Saginaw, and New Bedford—the infant mortality rate decreased from the lowest to the highest earnings groups.

For the infants of both native mothers and foreign-born mothers in New Bedford the same decline in mortality rates by father's earnings appears. In both nativity groups the rates were markedly higher for the low earnings groups, though the rates, based as they are upon fewer cases, show more fluctuations.

COMPARISON OF "UNFAVORABLE" AREA WITH THE REST OF THE CITY.

The majority of the very poor included in the study lived in the so-called "unfavorable" area, consisting of precincts 1, 2, 3, 13, and 17, as defined at the time of the study. In these precincts the poorest accommodations and the cheapest rents were found. The cotton-mill workers, the majority of whom belonged in the lower economic groups, sought homes near the mills. Seventy-two per cent of the live births in families in the lowest earnings group, under $450, were to mothers who lived in this area. It was not until the earnings group $850 to $1,049 was reached that the majority of the live births were to mothers who lived outside this area. A smaller proportion of the native mothers lived in the "unfavorable" area than of the foreign-born mothers; a majority of native families lived outside the "unfavorable" area for all earnings groups above $550, while a majority of foreign-born families in each earnings group lived within this area. This section represented the colonizing ground for most of the large groups of foreigners, and they still clung to their colonies even when a rise in economic status would have permitted them to live in better and more comfortable quarters elsewhere.[1]

ECONOMIC STATUS AND SIZE OF FAMILY.

Forty per cent of all babies included in the study were fourth or later births. The average size of the family was 3.8 persons, exclusive of the scheduled baby. The largest families were found in the two groups, $650 to $849 and $850 to $1,049, each of which had an average of 4 persons per family. In the lowest earnings groups, under $450 and $450 to $549—those in which the problem of making ends meet is the most serious—47.2 per cent of the births occurred in families of four or more persons, exclusive of the baby. For the entire group studied, over one-fourth of the births (28.6 per cent) occurred in families of five or more persons.

In every earnings group the size of the families of the foreign-born mothers was greater than of the corresponding group of native mothers. Even if wages had been relatively the same instead of not so high, the foreign groups would not have been so well off as the corresponding native groups, since the wages had to provide for a larger number.

FATHER'S EARNINGS AND EMPLOYMENT OF MOTHER.

The coincidence of low earnings of the father and gainful employment of the mother seems to indicate that such employment is the result of poverty rather than of custom or preference. Sixty-one per cent of the births to mothers whose husbands earned less than $450 were to mothers employed during the year following the babies' births. In the higher earnings groups the percentage of mothers employed steadily decreases. In each earnings group a larger percentage of foreign-born than of native mothers were employed at some time during the year after the birth. (See Table XXI.) This excess may be due to the fact that the economic need is relatively greater on account of the large families of the foreign-born mothers.

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[1] General Table 20.

RATES ACCORDING TO FATHER'S EARNINGS FOR THE THREE CITIES SPECIFIED.

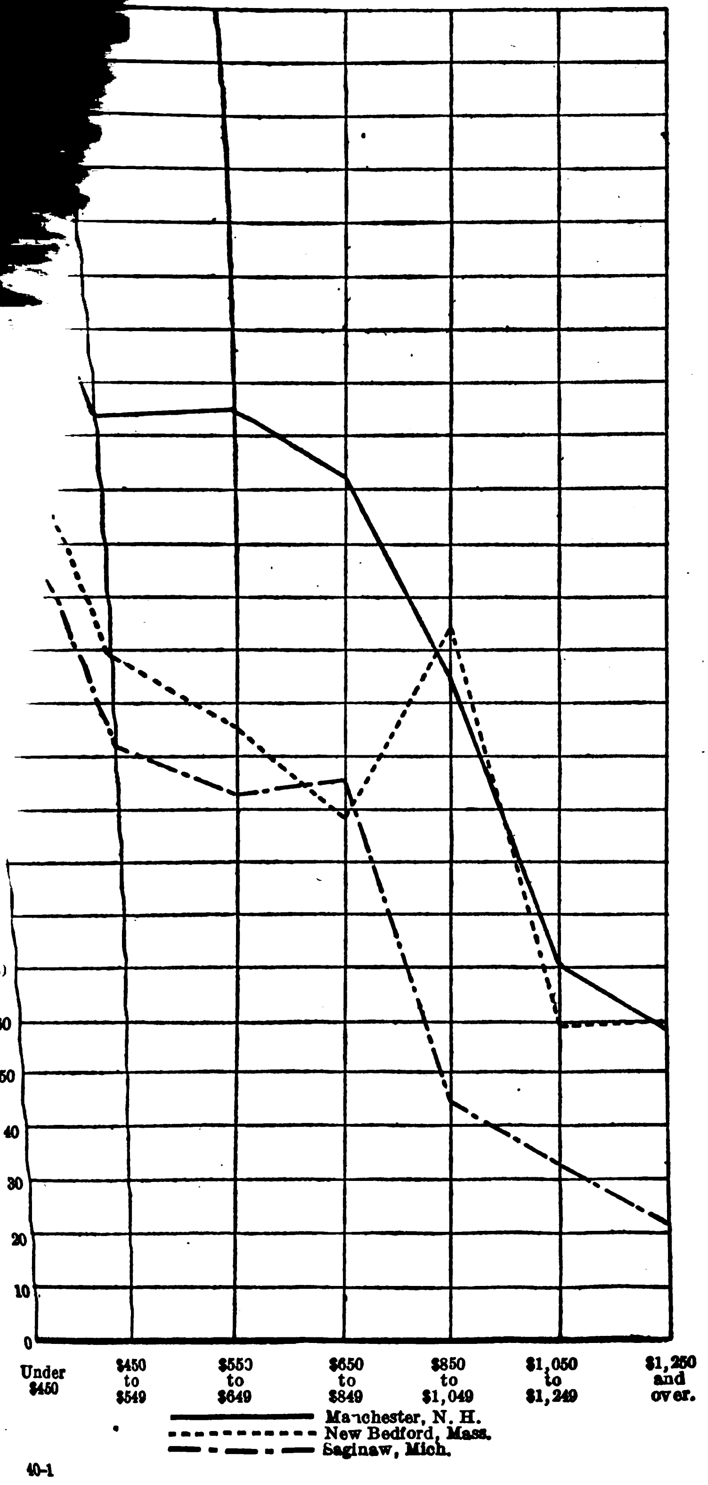

Chart VI.—PERCENTAGE OF MOTHERS GAINFULLY EMPLOYED, BY NATIVITY, ACCORDING TO EARNINGS OF FATHER.

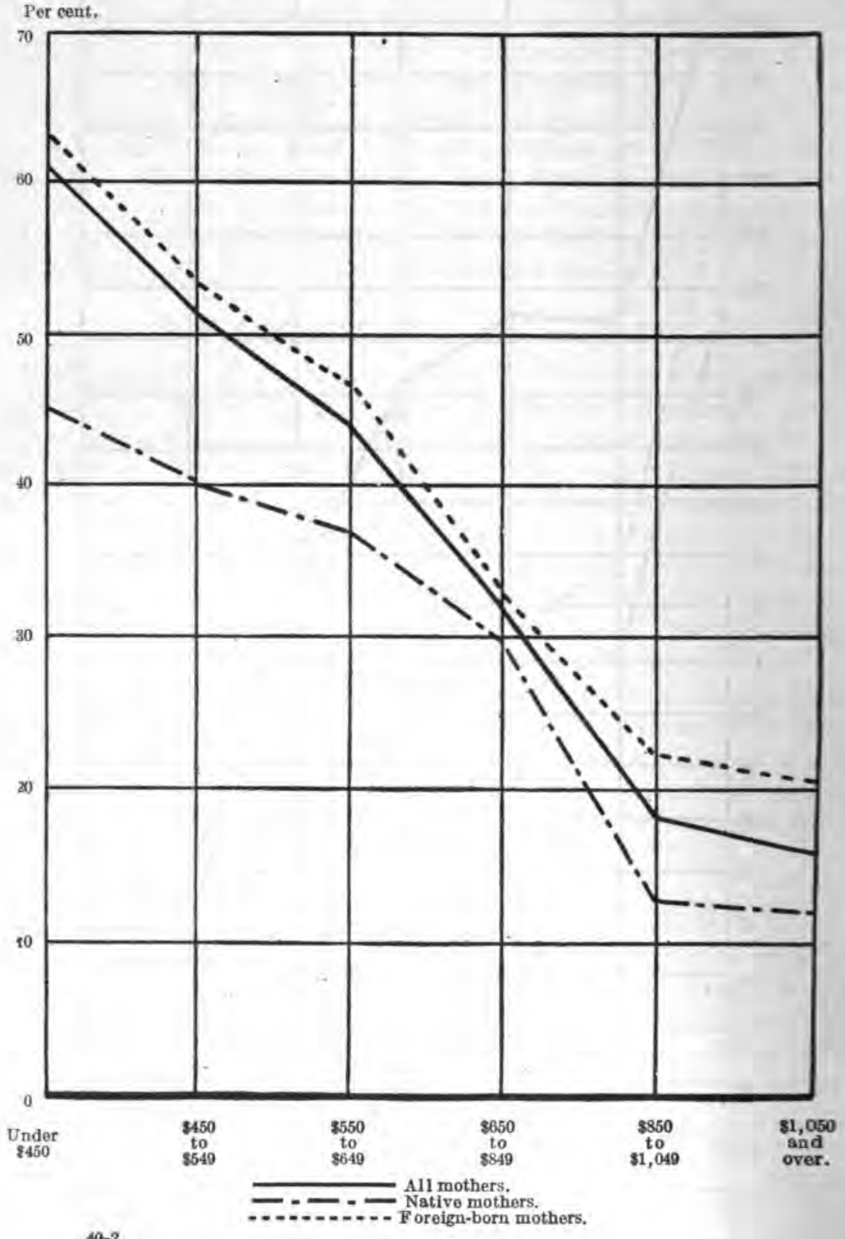

TABLE XXI.—*Births during selected year and number and per cent of births to mothers of specified nativity gainfully employed during year following birth of infant, according to earnings of father.*

Earnings of father.	All mothers.			Native mothers.			Foreign-born mothers.		
	Total births.	Gainfully employed.		Births.	Gainfully employed.		Births.	Gainfully employed.	
		Number.	Per cent.[a]		Number.	Per cent.[a]		Number.	Per cent [a]
All fathers	2,662	1,077	40.5	753	203	27.0	1,909	874	45.8
Under $450	551	337	61.2	60	27	....	491	310	63.1
$450 to $549	453	233	51.4	67	27	....	386	206	53.4
$550 to $649	387	171	44.2	107	40	37.4	280	131	46.8
$650 to $849	625	199	31.8	194	58	29.9	431	141	32.7
$850 to $1,049	308	56	18.2	146	19	13.0	162	37	22.8
$1,050 and over	258	41	15.9	146	18	12.3	112	23	20.5
No earnings	36	24	....	17	8	....	19	16	....
No report	44	16	....	16	6	....	28	10	....

[a] Not shown where base is less than 100.

Chart VI illustrates the decline in per cent of mothers gainfully employed with the improvement in economic status.

GAINFUL EMPLOYMENT OF MOTHER.

The high infant mortality rates prevailing in textile towns, where large numbers of women are employed, suggests that gainful employment of mothers is an important factor in infant mortality. It is difficult to isolate the effect of this single factor and to determine how large a part it plays in maintaining a high infant mortality rate. But by contrasting the group of wage-earning women with the group of mothers not employed the relation between the infant mortality rate and the employment of the mother can be studied.

According to the census,[1] 38 per cent of the wage earners in New Bedford in 1909 were women. This study shows a large proportion of mothers gainfully employed, 47 per cent of the births studied being to mothers gainfully employed during the year preceding the baby's birth and 41 per cent to those so employed the year following. Most of these mothers were gainfully employed both the year before and the year after the birth of their infants.

EMPLOYMENT AND NATIVITY.

A much larger proportion of foreign-born than of native mothers, one-half and one-third, respectively, were gainfully employed during the year before the birth of their babies. Fewer mothers in each group worked after the birth of the infants, but relatively more foreign-born than native mothers.[2]

U. S. Bureau of the Census, 1910, Manufactures, Vol. IX, p. 540.

[2] General Tables 22 and 24.

CLASSIFICATION OF EMPLOYMENT.

Gainful employment of mothers may be divided into two classes—work at home, including keeping lodgers, dressmaking, millinery, and helping in husband's business if this place of business adjoins or is practically part of the dwelling place of the mother; and employment away from home, which includes factory and store work, char work, domestic service, and other employments necessitating the mother's absence from the home. Work away from home would naturally be more detrimental to the welfare of the infant, since it would deprive him of breast feeding and his mother's care during at least a part of the day.

EMPLOYMENT DURING YEAR PRECEDING BIRTH OF BABY.

During the selected year 1,242 births occurred to mothers employed at some time during the year preceding childbirth, and mothers of 882 of these infants were employed in extradomestic occupations, most of them in the textile mills. The infant mortality rates show a considerable difference in favor of the infants whose mothers were not gainfully employed prior to childbirth. The rate for this group was 108.8, as contrasted with 154.5 for infants of employed mothers. For infants of mothers employed away from home the rate was 167.8, and it was still higher—175.4—for infants of mothers employed in the textile mills. (See Table XXII.)

TABLE XXII.—*Births during selected year, infant deaths, infant mortality rate, and per cent of stillbirths, according to employment of mother during the year preceding birth of infant, and nativity of mother.*

Employment of mother during year preceding birth of infant, and nativity of mother.	Total births.	Live births.	Infant deaths.	Infant mortality rate.[a]	Stillbirths.	
					Number.	Per cent of total births.[a]
All mothers	2,662	2,587	337	130.3	75	2.8
Not gainfully employed	1,420	1,370	149	108.8	50	3.5
Gainfully employed	1,242	1,217	188	154.5	25	2.0
At home	360	353	43	121.8	7	1.9
Away from home	882	864	145	167.8	18	2.0
Native mothers	753	729	79	108.4	24	3.2
Not gainfully employed	502	484	47	97.1	18	3.6
Gainfully employed	251	245	32	130.6	6	2.4
At home	72	69	8	([a])	3	([a])
Away from home	179	176	24	136.4	3	1.7
Foreign-born mothers	1,909	1,858	258	138.9	51	2.7
Not gainfully employed	918	886	102	115.1	32	3.5
Gainfully employed	991	972	156	160.5	19	1.9
At home	288	281	35	123.2	4	1.4
Away from home	703	688	121	175.9	15	2.1

[a] Not shown where base is less than 100.

An analysis of the length of time before childbirth that employment ceased was made for the 812 births to mothers who worked in the cotton mills. In 8 cases the mother reported either no cessation before confinement or cessation of work the day before the birth of the baby; in 24, less than one month before confinement; and in 168 cases, or 21 per cent, less than three months before. The infant mortality rate for the group whose mothers reported no cessation or cessation of work less than three months before confinement was 184.5, while the rate for infants of gainfully employed mothers who ceased work with a longer interval before confinement was 174.9.[1] The rate is slightly higher for the mothers who worked up to within three months of confinement; but in either case the mortality rate is high for infants of mothers gainfully employed in the cotton mills during pregnancy.

WORK AFTER CHILDBIRTH.

The mothers of 1,077 infants, or 40 per cent of the total included in this study, were gainfully employed at some time during the year following childbirth; in 599 instances, or 56 per cent, the mother was employed away from home.

The story told by one of the mothers of her working day was perhaps typical of the experiences of this group of mothers. She was a weaver in the mill and preferred working to being at home; she also needed the extra money. She worked from 6.45 in the morning until 5.30 in the afternoon and cooked supper, cleaned house, and did her ironing at night. Her mother-in-law, who lived upstairs, took care of the children and cooked the noon meal. This mother had worked in the mill since she was 12. She generally went back to her work two months after a confinement, changing the feeding of the infant at that time from breast to artificial. One child had died at the time of this change; the mother, therefore, fearing the change had caused the death of the child, had given the infant in the study artificial feeding from birth.

Of the 578 live-born infants of mothers employed outside the home, 146 died in the first year of life. The rate, 252.6, characterizes conditions in families where the mother works—over three-fourths of these mothers employed after childbirth in extradomestic employment had also been employed before childbirth; but since deaths that occurred before the mothers went to work are included, it does not show the direct effect of the mother's employment after the baby's birth upon his chance of survival. Of the 146 deaths, 103 occurred before the mother went to work. Clearly, in these cases, the death of the infant can not be attributed to the mother's employment following the baby's birth.

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[1] Derived from General Table 22.

The effect upon infant mortality of the mother's employment away from home during the year after the infant's birth may be shown by the following calculation. There were 475 infants who were alive when their mothers commenced or resumed work. If the average infant mortality rate for the city for the remainder of the year had prevailed among them, a total of 29 deaths would have occurred; but actually 43 of these infants died. The ratio of 43 to 29 expresses the extra mortality among these infants of gainfully employed mothers. (See Table XXIII.)

TABLE XXIII.—*Infants born in selected year whose mothers resumed work away from home during specified month of infant's life, average number of subsequent deaths per 100 surviving at beginning of month, actual subsequent deaths, and deaths expected at average rates.*

Month of life of infant during which mother commenced work away from home.	Infants whose mothers commenced work.	Subsequent deaths in year.		
		Average deaths per 100 surviving at beginning of month of life.	Expected at average mortality.	Actual
Total	475	....	28.8	[illegible]
First	19	[a] 11.0	2.1	[illegible]
Second	66	9.5	6.3	[illegible]
Third	75	8.3	6.2	[illegible]
Fourth	66	7.4	4.9	[illegible]
Fifth	42	6.1	2.6	[illegible]
Sixth	49	5.1	2.5	[illegible]
Seventh	41	4.3	1.8	[illegible]
Eighth	34	2.9	1.0	[illegible]
Ninth	36	2.3	.8	....
Tenth	30	1.6	.5	....
Eleventh	16	.8	.1	....
Twelfth	1	.4	([b])	....

[a] Per 100 infants who lived to be fed.

[b] Less than one-tenth of 1 per cent.

An analysis by age of baby at mother's resumption of work indicates that almost all the excessive mortality occurred among the cases in which the mother took up work away from home when the baby was less than 4 months old. For this group, numbering 226, a total of 20 deaths would have been expected at average rates, but 35 deaths occurred. The mortality was, then, one and three-quarters times the average rate. For the remainder, there was practically no difference between the rate for all the infants included in the study and the rate for the infants whose mothers were gainfully employed during the infant's lifetime. If reliance can be placed upon the indications afforded by these figures, it would appear that early resumption of work by the mother is especially harmful to the welfare of her baby.

GAINFUL EMPLOYMENT OF MOTHER AND FEEDING.

One of the common consequences of a mother's having to seek gainful employment after the birth of her baby is that she is unable to nurse him. Table XXIV shows the relation between the type of feeding and the employment of the mother.

TABLE XXIV.—*Per cent artificially fed among infants born in selected year to mothers of specified working status, by selected age of infant.*

Age of infant.	Per cent of infants artificially fed.		
	Mothers not gainfully employed before specified time.	Mothers gainfully employed before time specified—	
		At home.	Away from home.
3 months	24.3	18.0	45.9
6 months	33.4	29.1	68.5
9 months	41.7	39.0	73.7

Of the infants of mothers gainfully employed away from home a very large proportion was artifically fed, a proportion about twice as great at 3 and 6 months as for infants whose mothers were not at work. For infants aged 9 months nearly three-fourths of those whose mothers were employed away from home were artifically fed as contrasted with two-fifths for those whose mothers were not at work.

A Portuguese grandmother, who cared for the baby during the day, told of the baby's mother having to go back to the mill when the baby was only 2 weeks old because of the desertion of her husband. For two weeks after returning to work she came home at noon and nursed the baby; after this, however, she decided that when she was tired her milk was not good for the baby and weaned him altogether at the age of 1 month.

The 4-months-old baby of an Italian mother was weaned when his mother returned to her spinning at the mill and was fed a proprietary food and anything else he wished, including ice cream and bananas.

A French-Canadian mother who went back to her work as a weaver three weeks after her baby's birth weaned the baby soon after. The cow's milk which the baby was fed after this time was not suited to him and at 4 months he died of malnutrition.

Another mother (Portuguese) returned to her spinning at the mill three months after the baby's birth. Her milk left her and the baby was weaned. Cow's milk was tried first, then condensed milk, and finally a proprietary food. The baby had convulsions at 4 months, again at 8 months, and at 12 months had convulsions for one month and died.

That not all the infants of mothers employed away from home were artifically fed was due to the fact that in many instances mothers were employed near their homes. It was possible for these mothers to return at certain periods of the day to nurse their infants, or the infants might be brought to the places of employment.

The fact that 46 per cent of the deaths of infants of mothers who worked in the mills were due to gastric and intestinal diseases while only 25 per cent of the deaths of infants of mothers not at work were from these causes would seem to show that the employment of the mother, as a rule entailing artificial feeding of the infant, was an important factor in causing the great number of deaths from this largely preventable cause.

EMPLOYMENT OF MOTHERS IN COTTON MILLS.

Since 540 of the 578 live births to mothers employed outside the home the year after the birth of the scheduled baby were to mothers who were cotton-mill operatives, a special study was made of this group.

The mothers of 96 of these infants were native, and of 444 foreign born, including 194 Portuguese white.[1] The classification of the 444 foreign-born mothers employed as cotton-mill operatives shows them to be of comparatively recent immigration, with 42 per cent illiterate and 58 per cent unable to speak English. The Portuguese white added the greatest number, proportionately, to the illiterate and non-English-speaking groups. Thirty-three per cent of this nationality group had been in this country less than 5 years, and 31 per cent had been here 10 years or more. Sixty-six per cent were illiterate and 78 per cent could not speak English. Among other foreign-born mothers these factors were not so pronounced; mothers of 55 per cent of the births in the groups of other non-English-speaking nationalities were unable to speak English and 23 per cent were illiterate; mothers of 22 per cent had been in the United States less than five years.[2]

How great was the economic need which caused this employment of mothers in cotton mills is shown in General Table 28. Practically all the working mothers were in families where the father earned under $850, there being only 21 instances in the three income groups of over $850.

In this connection it may be pointed out that in 12 instances of working mothers the mother had been deserted, in 6 cases the father had died, and in 1 case the father was sick the entire year.

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[1] General Table 24.

[2] Derived from General Tables 26 and 27.

LEGISLATION IN REGARD TO EMPLOYMENT OF MOTHER.

Massachusetts is one of four States[1] which in 1913 had laws prohibiting the employment of women immediately before or after confinement. The Massachusetts law[2] reads:

> Section 1. No woman shall knowingly be employed in laboring in a mercantile, manufacturing, or mechanical establishment within two weeks before or four weeks after childbirth.
>
> Section 2. The foregoing section shall be included in the notice with regard to the employment of women now required to be posted in mercantile, manufacturing, and mechanical establishments, and the provisions thereof shall be enforced by the district police.
>
> Section 3. Violations of section one of this act shall be punished by a fine not exceeding one hundred dollars.
>
> Section 4. This act shall take effect on the first day of January, nineteen hundred and twelve.

No adequate provision was made for the enforcement of the law. Practically it can be carried out only where a matron or other person is appointed to see that its provisions are complied with. It could not be expected that the 34 State inspectors, whose territories were so large that it was impossible for them to make the rounds more than once in two or three years, could supervise the enforcement of this law. Only one New Bedford cotton mill employed a matron to see that the proper rest periods were observed.

CIVIC AND SOCIAL FACTORS.

BIRTH REGISTRATION.

In Massachusetts the city clerks were charged with keeping the records of vital statistics. The State was one of the first admitted into the provisional birth-registration area, established by the United States Bureau of the Census; for inclusion in this area a registration 90 per cent complete is required.[3]

Physicians and midwives were required under the State law to file with the city clerk a partial report within 48 hours, and a complete report within 15 days, of births which they had attended. The law provided for a fee of 25 cents to be paid the physician or midwife so reporting a birth, and exacted a penalty of a fine not to exceed $25 for failure to report.[4] Parents, householders, keepers of institutions, and masters of vessels were also required by law to report to the city clerk any births occurring within their domain, and for failure to report a penalty of a fine not to exceed $5 was imposed.[5]

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[1] Connecticut, Massachusetts, New York, and Vermont.

[2] Acts of 1911, ch. 229. Approved Mar. 31, 1911.

[3] Massachusetts had been admitted into the similarly constituted census area of adequate death registration in 1880.

[4] Laws 1912, ch. 280, secs. 1 and 2.

[5] Revised Laws 1902, ch. 29, secs. 6, 7, and 8.

Various methods of checking and supplementing birth returns were in use in the office of the city clerk at New Bedford. Every year, in January, canvassers were appointed who visited every house in the city to ascertain whether any births had occurred there during the previous year. The canvassers' returns were then compared with the birth records already obtained, and any births which had not been registered were then placed on record. This procedure resulted in making the returns more complete. The only difficulty lay in the fact that frequently canvassers' returns were not identified with records already received on account of slight differences in name, date, or place of birth; many births were thus registered twice. In the course of the investigation, 97 registered births were found to be duplicates and 2 were triplicates. In addition to canvassing, the city clerk made a birth entry whenever a death certificate of an infant who was born in New Bedford and for whom he had no birth record was returned to his office. Members of the clergy had been asked to cooperate with the city clerk in his efforts to secure complete birth registration, by furnishing him with copies of their birth or baptismal records.

That the various methods adopted in New Bedford for securing a complete registration of births have been effective is indicated by the fact that of the 3,542 total births found during the investigation to have occurred in 1913, only 49, or 1.4 per cent, were unregistered. It is evident that registration of births for this city is exceptionally thorough.

THE BOARD OF HEALTH.

The board of health as constituted in 1913 had 26 employees in various capacities and was headed by a full-time health officer.[1] Only those of its activities which bear upon infant mortality will be summarized in this report.

It was the duty of one of the two nurses employed by the board of health "to visit the homes of the newly born where midwives have officiated." Many cases of ophthalmia neonatorum in its early stages were discovered and, as already mentioned, specialists were employed to give necessary treatment. During 1913 the nurse made 1,546 visits to homes where births had been reported to the board of health by attending physicians and midwives.[2]

The mother of every new-born child was mailed a printed circular giving her instructions as to the care of her child during infancy.[2] The pamphlets were printed in English, French, Portuguese, and Polish, and emphasized the advantage of breast feeding, light clothing in summer, frequent bathing, fresh air, and medical attention in case of illness. The department, since 1914, had furnished to mothers copies of a pamphlet, "The Baby and You," supplied by the division of hygiene of the State department of health; additional instructions and explanations were given to the mothers in person by the visiting nurses. In its annual report for 1915, the board of health, in a discussion of "Baby welfare work," states that "the problem of infant mortality demands the best efforts of the department and the community." The report then discusses the various factors related to infant mortality—milk supervision, milk stations, good sanitary conditions, housing, feeding, prenatal conditions, industrial conditions—and concludes that "our main reliance must be placed in educational work. Mothers must be instructed in the care of the baby both before and after it is born. The physician can contribute to this, but as doctors are often not called except at childbirth, and sometimes not even then, other ways of reaching the mothers must be tried. The obvious ways are through printed instructions and public nurses, and of these the latter are by far the more helpful."

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[1] Municipal Manual, City of New Bedford, Mass., prepared by Charles P. Sawyer, Clerk of Committees, Clerk of Common Council, May 1, 1914; pp. 38 and 39.

[2] Annual Report of the Board of Health, 1913, City of New Bedford, Mass., pp. 6 and 21.

Milk supply.

The board of health also has the supervision of the milk supply of New Bedford, the milk ordinance providing that "no person, firm or corporation shall engage in the production, sale, delivery, or distribution of milk in the city of New Bedford except in accordance with the rules and regulations of the board of health of New Bedford."

Practically all the milk sold in New Bedford was produced within a radius of 12 miles, except for a very small amount which was brought in by one producer who lived 21 miles away. The total quantity amounted to about 50,000 quarts daily. Some of it was peddled by the producers themselves, and some was distributed by dealers, but at the time of this study a large part was sold in the form of loose milk by the various stores. The practice of the sale of loose milk has since been prohibited by the board of health.

Only one inspector of the board of health was charged with inspecting dairies and places where milk was sold. He also had to inspect bakeries, slaughterhouses, and stores selling fruit, vegetables, and other provisions.[1] It was obviously impossible for one person to inspect with sufficient frequency over 400 dairy farms, over 150 peddlers, and 300 stores where milk was sold, and to attend to the inspection of other food products besides. During 1913, 303 visits of inspection of dairy farms had been made; the inspector was unable to make the rounds even once a year. The regulations of the board of health covering the production and sale of milk (as revised August,

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[1] Annual Report of the Board of Health, 1913, City of New Bedford, Mass., pp. 20 and 21.

1913)[1] included provisions that distributors of milk must be licensed annually and that both producer and distributor must proceed in accordance with the regulations prescribed by the board. The principal provisions relating to the handling of milk were the following: Cow stables to be kept clean, well lighted and ventilated, and the tie-ups whitewashed twice a year; the keeping of swine prohibited within 50 feet of any barn or building; the hands of milkers to be washed before milking; milk to be cooled immediately after milking; all utensils used in the sale, delivery, or distribution of milk to be sterilized before using again and certain provisions are included in regard to the rooms in which milk may be stored.

Dealers of milk must furnish the board of health with the list of producers from whom they secure their supply, and samples may be taken from time to time for bacterial count and the premises of the producers may be inspected to determine whether the regulations of the board are complied with.

These regulations failed to include certain provisions which have been designated as "cardinal points" in a good city milk ordinance.[2] Omissions were as follows:

1. Temperature standards governing the temperature at which milk shall be held on the farm, in transit to the city, in storage, and on delivery wagons.
2. A policy in regard to the control of bovine tuberculosis.
3. Provision for the use of score cards.

Chemical and bacteriological standards and standards for pasteurization, points not covered by the city ordinances, are regulated by the State laws.

Samples of milk were collected by two of the sanitary inspectors and analyzed for bacterial count by the bacteriologist, who gave part time to this duty. In 1913, 633 samples of milk were collected and examined, an average of about 4 samples a year from each peddler. Since the time of the study the city has made tests for butter fats and total solids, as well as for bacterial count; previously the tests for butter fats and total solids were made by State authorities.

The method employed in testing milk was to "centrifuge"; then a "smear" was taken and examined under the microscope. The reports of the bacteriologist for the year 1913 [3] showed 493 samples below 50,000 per c. c., and 85 above 200,000 per c. c., these figures being approximate only. The majority of the tests took place during the summer months when there was greater chance for pollution of the milk; in the winter months very few tests were made.

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[1] Regulations governing the production, care, and sale of milk in New Bedford, as revised and adopted Aug. 9, 1913.

[2] Parker, Horatio. City Milk Supply, pp. 378 and 379.

[3] Annual Report of the Board of Health, 1913, City of New Bedford, p. 12.

A full-time bacteriologist and more than one milk inspector might well be employed to safeguard properly the milk supply. With so high a mortality from gastric and intestinal diseases, more stringent measures to assure clean milk would seem especially urgent.

Care in producing and handling milk has probably improved greatly among the dairies supplying New Bedford in the last few years. Some years prior to this study various public-spirited citizens, realizing the necessity for a clean supply of milk not only to reduce infant mortality but also to prevent diseases of adults, carried on a campaign to teach the dairymen the best methods of keeping milk clean and cool until its delivery in the city. A demonstration wagon was fitted up and visits were made to the whole countryside; actual demonstrations of handling milk were given, with tests showing that the methods were efficient as well as simple. This campaign of education doubtless contributed to more general production of clean milk.

SANITATION.

Water supply.

New Bedford owns and manages its own system of waterworks. Since 1899 the whole water supply has been taken from Great and Little Quitticas Ponds, 11 miles north of the center of the city. The two ponds are connected and from Little Quitticas Pond the water enters a pumping station, first passing through coarse wire screens. From the pumping station it is forced into a reservoir on High Hill in the neighboring town of Dartsmouth. From this reservoir, after passing through finer screens, the water flows by gravitation into the city's distributing system.

The use of city water in New Bedford was practically universal. The water board in its annual report for 1914 [1] estimated that during the year 103,000 of New Bedford's estimated population of 108,000 were supplied with city water—approximately 95 per cent of the population. Of the families included in this study, 98 per cent were using city water. The remaining 2 per cent, who were using water from dug or driven wells, or in a few cases from springs, were families who lived in the rural area toward the north and west of the city, where water mains had not yet been introduced.

Supervision of the water supply was under the direction of the State board of health, and a chemical analysis of samples was made six times a year. The findings were published in the annual reports of the local water board and in the reports of the State board of health. In general the water supply of New Bedford seemed satisfactory.

Sewerage.

The sewerage system in New Bedford seemed fairly adequate to serve the city. In 1913 it included 110.5 miles of sewers. Since the sections not supplied with sewers were for the most part rural in character, a comparison of the 110.5 miles of sewers with the 180.6 miles of accepted streets shows a fairly comprehensive provision for the collection of sewage in the city proper.[1] The city engineer estimated that about 95 per cent of the dwellings in New Bedford were connected with the city sewers. Of the dwellings of families covered by this investigation, 97 per cent had sewer-connected sinks, and 94 per cent had toilets connected with the sewer.

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[1] Annual Report of the Water Board of the City of New Bedford, 1914, p. 67.

Toilets.

At the request of the agent for the board of health the city assessors, when they went their rounds in the early part of 1914, counted the yard privies and reported 171. Making allowance for the probable incompleteness of the assessors' returns, the board of health agent estimated that there were in New Bedford on April 1, 1914, approximately 200 yard privies. In general, these privies existed only in places where sewerage facilities were inadequate—that is, in a very few sections in the outlying districts. In this study there were found 132 privies, only 2 of which were connected with a cesspool, and one dwelling which had no toilet.[2] This showing indicates that the city had made satisfactory progress in providing sewer connections for its dwellings and in banishing the objectionable yard privies.

Sewage disposal.

The system in operation in 1913, the year of the study, was essentially as follows: The sewers, some carrying only household and manufacturing wastes and some carrying storm water in addition, discharged from 31 outlets into the Acushnet River and from 16 outlets into Clarks Cove. The outlets into the Acushnet River, located in many cases close to the shore ends of docks, discharged the sewage into quiet and shallow waters where the current was not strong enough to carry it off properly. These outlets caused a considerable pollution of the shore waters of the Acushnet; offensive odors were constantly in evidence and were particularly objectionable near the points of discharge between long wharves. The Clarks Cove situation was even worse, for into this very shallow arm of the bay the sewage and drainage of a thickly settled residential section were discharged. With the completion of the new intercepting system in 1916, these objectionable features have been removed.

At the time of the study a new system of sewage disposal was under construction; begun in 1911, it was finally completed in 1916. Briefly outlined, the new system collects all sewage at points near the water front and conducts it to Buzzards Bay, where it is discharged into deep water 3,300 feet from shore. The sewage is thus dispersed and diluted by the waters of the bay without danger of creating a nuisance or of causing pollution of the water front of towns along the shore.

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[1] Annual Report of Superintendent of Streets, 1913, City of New Bedford, p. 4.

[2] General Table 29.

Disposal of ashes, refuse, and garbage.

The collection and disposal of ashes was under the supervision of the street department. Collection of ashes and other refuse was made once a week and the waste material hauled to dumps and used to fill in low land.

The dumps in New Bedford seemed to be unnecessarily numerous and unnecessarily near city dwellings. In addition to the dozen city dumps vacant lots in various sections of the city had accumulated deposits of refuse which were not only unsightly but particularly objectionable in that the children of the neighborhood used them as playgrounds. Plate 13 shows one of these dumps with a row of dwellings opposite and the street littered with scraps of paper and refuse. Many complaints had been made of the nuisances caused by these dumps, and the street department, police, and board of health were cooperating in attempting to improve them. Before land could be used as a dump a permit had to be secured from the board of health.

The collection and disposal of garbage was under the supervision of the board of health.[1] A private company held a 10-year contract for the disposal of garbage and night soil, and they sublet the contract for its collection and removal. Garbage was collected twice a week from November 1 to May 1, and three times a week from May 1 to November 1. From hotels and restaurants it was collected every day.

The extractor plant was located on the outskirts of the city, far enough away from dwellings to be unobjectionable. At the extractor plant grease and other products were extracted from the garbage.

Paving streets.

Approximately two-thirds of New Bedford's 181 miles of accepted streets were paved. Four-fifths of the paved streets were macadamized.[2] On a few of the older streets near the river and in the center of the city, and on the thoroughfares running west, cobblestone pavements were found, the stones usually very large and unevenly laid.[3] The newer roads near the outskirts of the town were not paved at all.

Cleaning, sprinkling, and oiling streets.

Macadam and dirt roads and gutters were cleaned by street brooms two or three times a year; paved streets were cleaned mostly by hand or by the "patrol" system. Streets were sprinkled or oiled from about the 1st of April until the 1st of October. Where the traffic was heavy the streets were oiled four times a year.

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[1] The contract for the disposal of garbage has been under the direction of the board of health and the contract for the collection of garbage has been under the highway department since 1916.

[2] Annual Report of Superintendent of Streets, 1913, City of New Bedford, p. 4.

[3] Since 1913 nearly all these streets have been repaved with stone-block pavements on a concrete base and grouted with cement (Hassam process).

SOCIAL AGENCIES.

Instructive Nurses Association.

The Instructive Nurses Association, besides carrying on the usual work of such an institution, maintained two infant-welfare stations during the summer months. In 1913 these stations were located in two schoolhouses, one in the north end in precinct 3,[1] where the majority of the Polish mothers, some of the French-Canadian, and many Portuguese-white mothers lived, the other in the south end on the border line between precincts 13 and 17. The latter station was accessible to the big colony of Portuguese-white and colored mothers who lived in this section of the city.

These stations were opened in 1913 from July 6 until September 26, and in both stations together 379 babies under 1 year were enrolled during that period. Three nurses had charge of the work at each station, and doctors contributed their services for clinics at stated hours during the week.

Milk is modified and pasteurized at the dairy by a graduate nurse, also in the homes when so ordered by the attending physician. Since 1913 another station in the south end has been added. The money for the support of these stations was raised by private subscription.

This association has been doing prenatal work for the past eight years, or since 1911. The nursing service of one of the more important life-insurance companies is furnished through the nurses association, which in this way is able to give the expectant mothers who are insured in this company advice and treatment.

BOARDING HOMES.

The law of Massachusetts [2] provides that any person who keeps in return for reward more than one infant not related to him by blood or marriage must be licensed. These infant-boarding homes are under the control of the State board of charity. The law requires that the State board must be notified whenever an infant under 2 years of age is received for compensation by any person not related by blood or marriage. Licenses are granted by the State board of charity after the application has been approved by the local board of health. At the time of this study six infant-boarding homes in New Bedford were licensed.

The lack of official supervision of homes where babies are cared for during the day hours only was one of the conditions which needed attention in New Bedford. Since the time of the study a new day-nursery law has gone into effect (July 26, 1919) requiring that places receiving three or more infants during the day shall be licensed by the board of health.

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[1] Wards and precincts according to ward and precinct lines existing at the time of the study.

[2] Revised Laws 1902, ch. 83, sec. 2.

HOUSING.

The effect of housing on the life and health of infants can be shown only very imperfectly in a statistical study of this kind. Defective housing conditions, lack of fresh air, overcrowding, and exposure to infection through defective sanitary arrangements may influence infant health or infant mortality. It is possible to obtain certain definite facts regarding the number of rooms in the dwelling, number of persons per room, toilet facilities, water and sewerage arrangements—facts which lend themselves readily to statistical presentation—and to show the proportion of the infants included in the study who lived under favorable or under unfavorable housing conditions. But it is relatively difficult to measure the influence of housing conditions on infant welfare, since these factors are so complex.

The discussion of housing is presented in two parts—first, a general survey of housing conditions throughout the city, to indicate the prevalence of housing defects in the city; and second, a presentation of housing conditions under which the infants of the study lived.

THE RIVER SECTION.

One of the oldest—and probably the poorest, most congested, and most dilapidated—sections of the city was the strip along the river, extending from the group of mills in the northern end of the city to the mills in precincts 16 and 17 [1] in the southern end of the city.

This particular part of the city may be designated as the river section, and it included most of the "unfavorable" area. In the center of this strip was the business district of the city and a long frontage of wharves which extended in both directions to the groups of mills at each end of the city. In one small section near the river the district is low; in one part of this section when the tide rises during especially stormy weather, water has been known to flow over the sidewalks and the doorsteps, but it has generally subsided in a half hour or so. There was practically no home ownership in this section, and rents were as low as accommodations were poor. Here were the most congested parts of the city; a large proportion of the lots were covered by large block houses.

Considerable congestion also existed within the apartments. In many cases a number of families lived together. In this neighborhood one of the agents of the bureau found five-room tenements occupied by from 15 to 18 people. Often the crowding was due to a number of lodgers. In a four-room tenement, just north of the business center, was found a family of seven, where lodgers were taken for 10 cents a night to help pay the $2.50 a week rental. The father, mother, and four children slept in one room, and one child in the kitchen; as many lodgers as possible were crowded into the other two rooms, which were filled solidly with cots, six in one room and four in the other. These were in use constantly for day and night shifts. All windows were shut. The rooms were filthy and had a foul odor.

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[1] Wards and precincts according to ward and precinct lines existing at the time of the study.

Most of the basement dwellings found were located in this section. Three young children were found living in two small, gloomy, damp rooms in a basement in the north end. In another case, in the southern part of the section, a family of 10 lived in two cellar rooms. All but 8 of the 21 children had died. The father was sick and could not work. One older boy supported the family with the aid of the mother, who took in washing. The family had other rooms upstairs, but for the sake of economy in fuel these two dark, cellar rooms were used for cooking, eating, and living rooms; the whole family except one boy slept in these damp cellar rooms.

Types of houses.

In the river section the houses, though uniformly old and in disrepair, were of three types—the mill-house type, the large block type, and the oldresidence type.

Five groups of mill houses were in this section. The largest was the group of some 30 houses built some time ago by one of the larger mills just north of the plant. These were four-tenement houses, three stories high, with two four-room apartments on each of the first and second floors, one on each side of the house. The occupants of each apartment had the use, also, of two rooms on the third floor, giving each apartment six rooms in all.

A similar group of 50 houses lay to the west of those just mentioned. The houses of these groups were identical except that in the second group there were usually only two stories and two apartments of eight rooms each, four on each floor. This type is shown in Plate II. These houses were built in bleakly symmetrical rows with large undrained courts between, paved only with mud and decorated with clothes poles and fluttering rags. The toilets, damp and dark, were in the cellars, one for every two apartments.

Another group of 27 newer tenements is illustrated in Plate III. These were two-tenement houses with six rooms to the apartment and with a toilet in each adjoining the kitchen. They were placed with the same monotonous regularity but were more sightly because of their new paint.

Other mill houses were scattered in this end of the river district; all were in poor repair; two contained 10 apartments each, with toilets in the cellars.

In the southern end of the river section was a group of 20 mill houses built in two long rows. Neither the street on which they

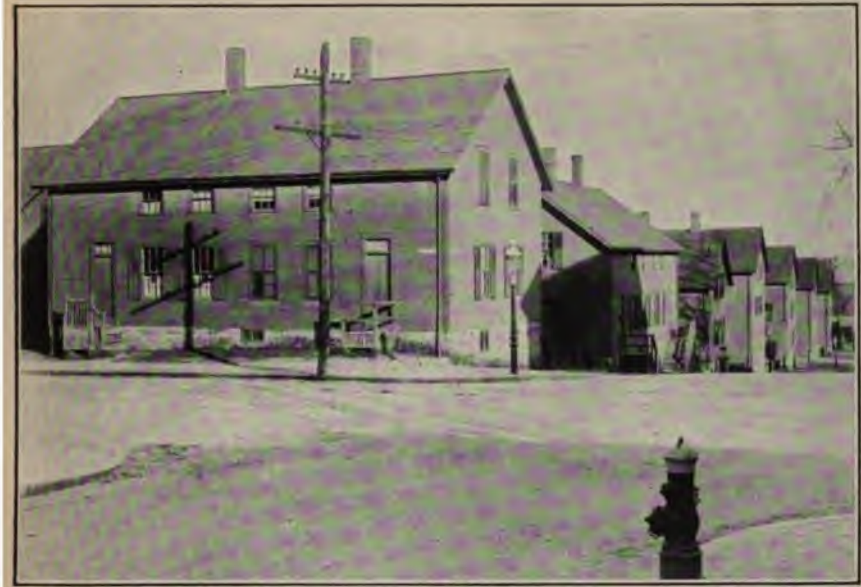

PLATE II.—TWO-FAMILY MILL HOUSES—ONE TOILET IN CELLAR FOR EACH TWO APARTMENTS.

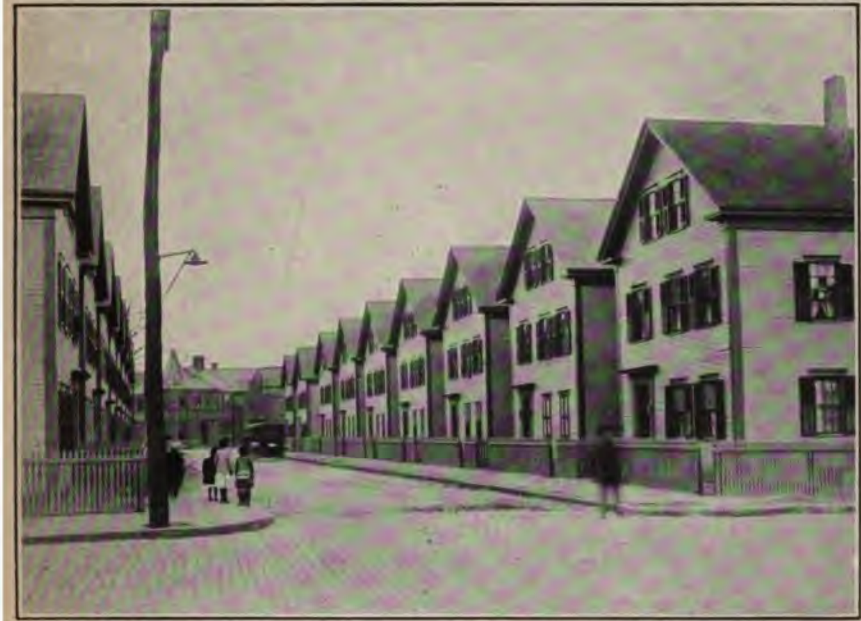

PLATE III.—PART OF A GROUP OF 27 MILL HOUSES—TOILET ADJOINING THE KITCHEN IN EACH APARTMENT.

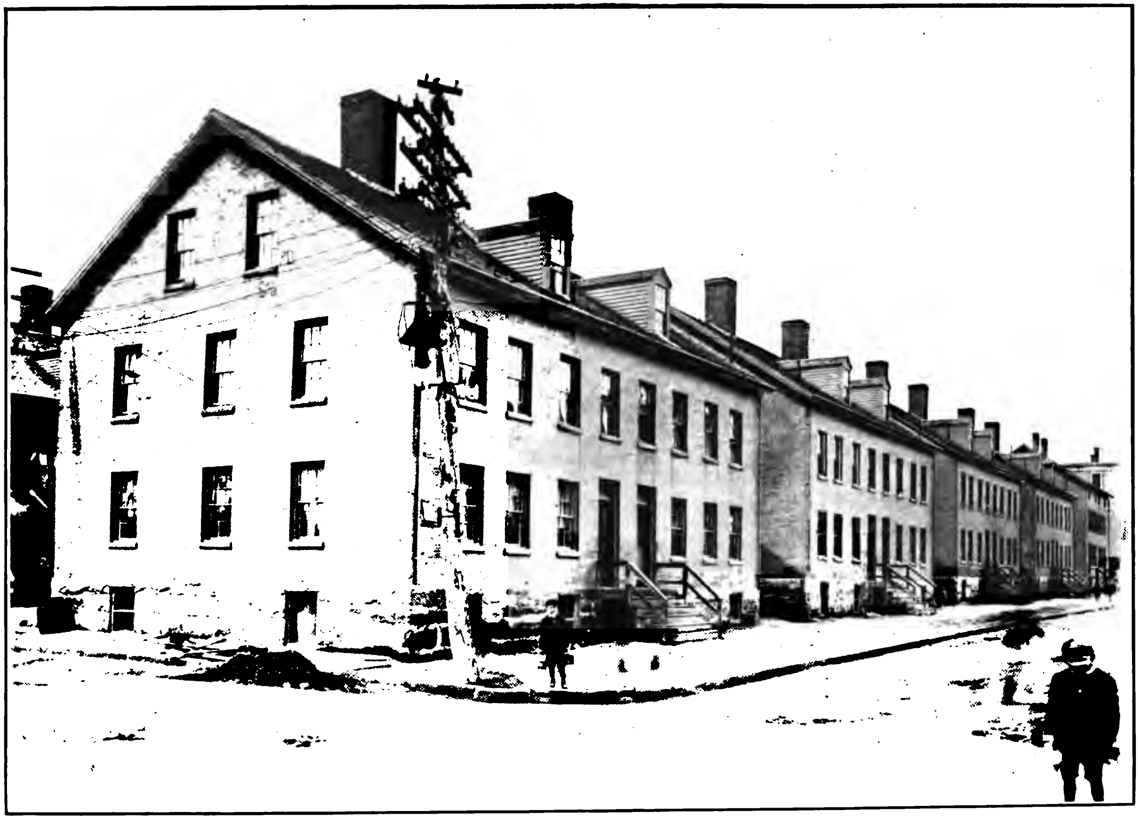

PLATE IV.—BRICK MILL TENEMENTS—TOILETS IN THE CELLARS.

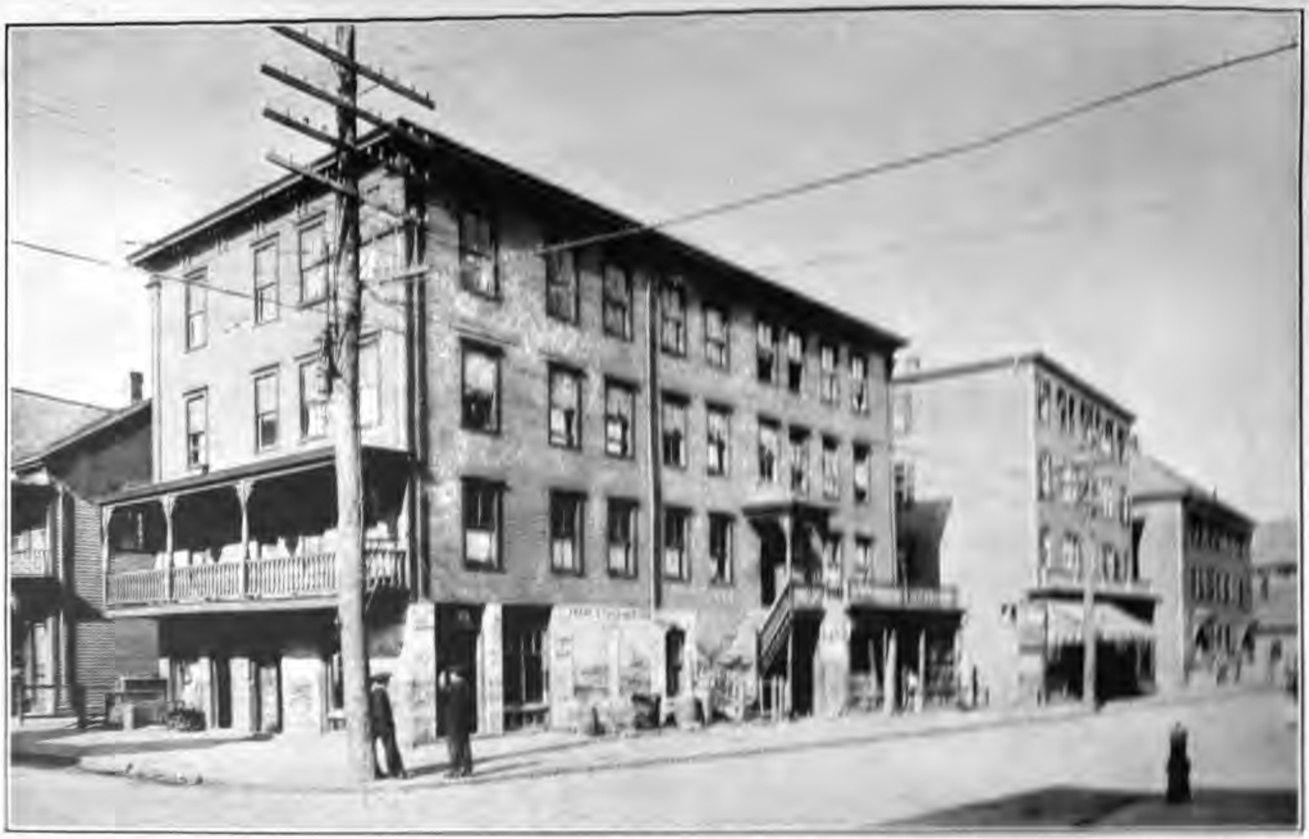

PLATE V.—LARGE BLOCK TENEMENT IN WHICH 56 PERSONS WERE LIVING—ONE TOILET IN THE HALL ON EACH FLOOR.

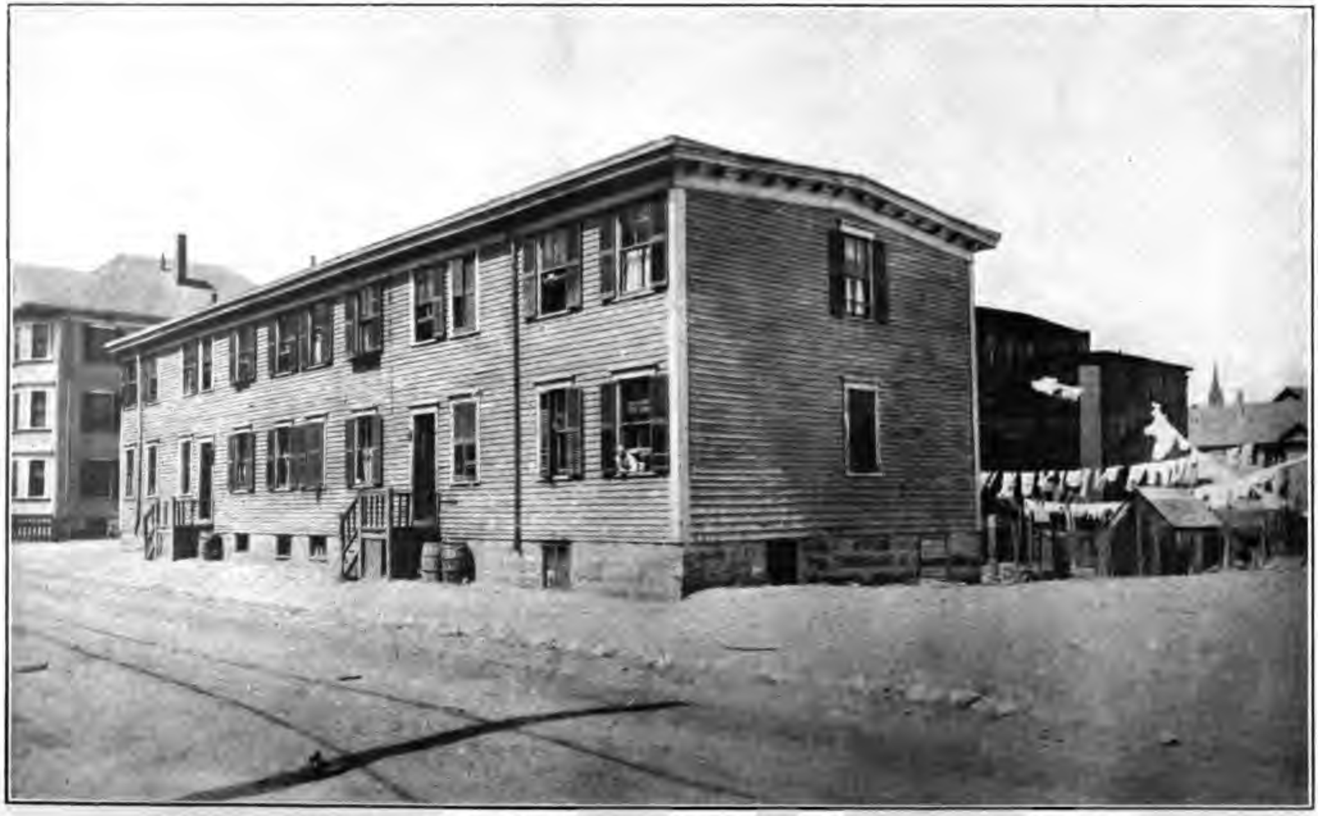

PLATE VI.—A PARTICULARLY BAD BLOCK TENEMENT—CONTAINING EIGHT SMALL APARTMENTS.

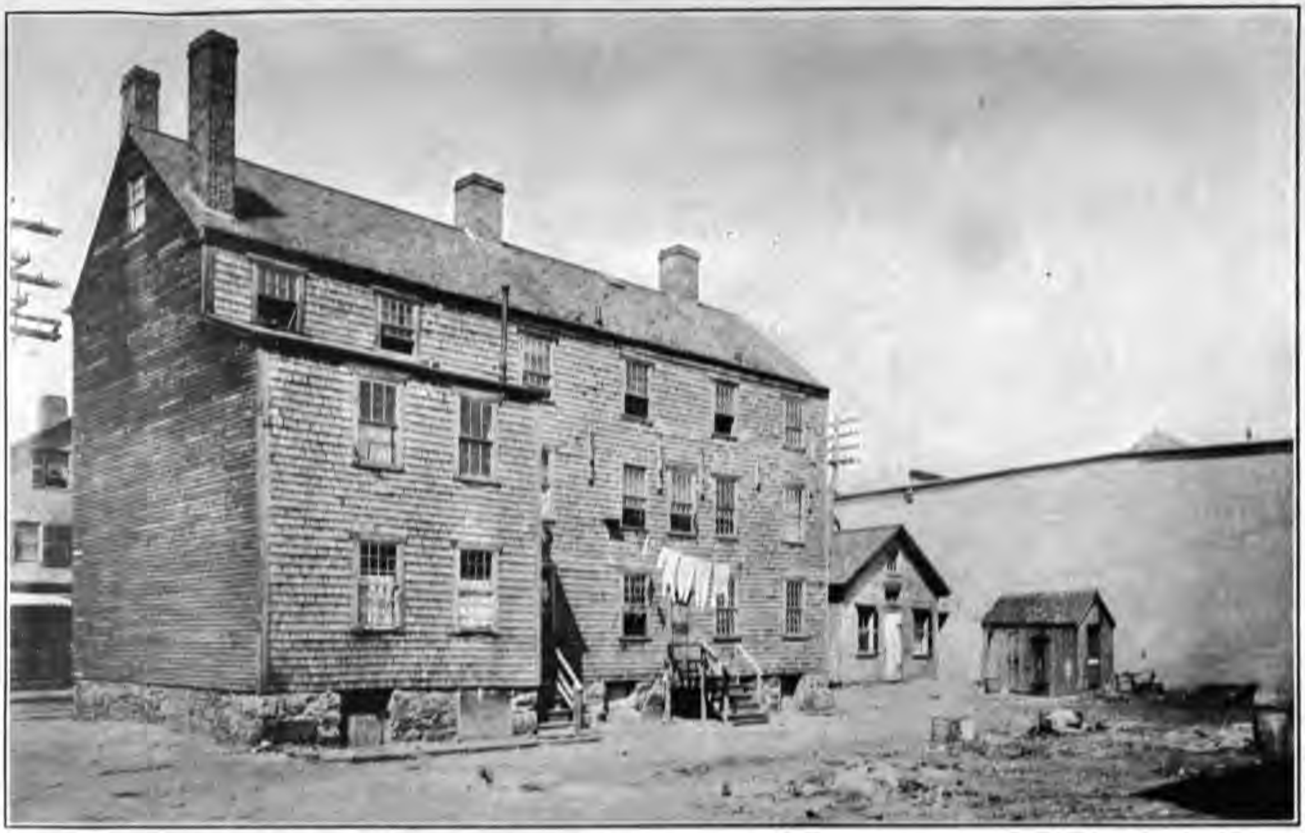

PLATE VII.—HOUSE CONTAINING SMALL, ILL-PLANNED APARTMENTS—STREETS AND THE YARD IN THE REAR LITTERED WITH RUBBISH AND GARBAGE.

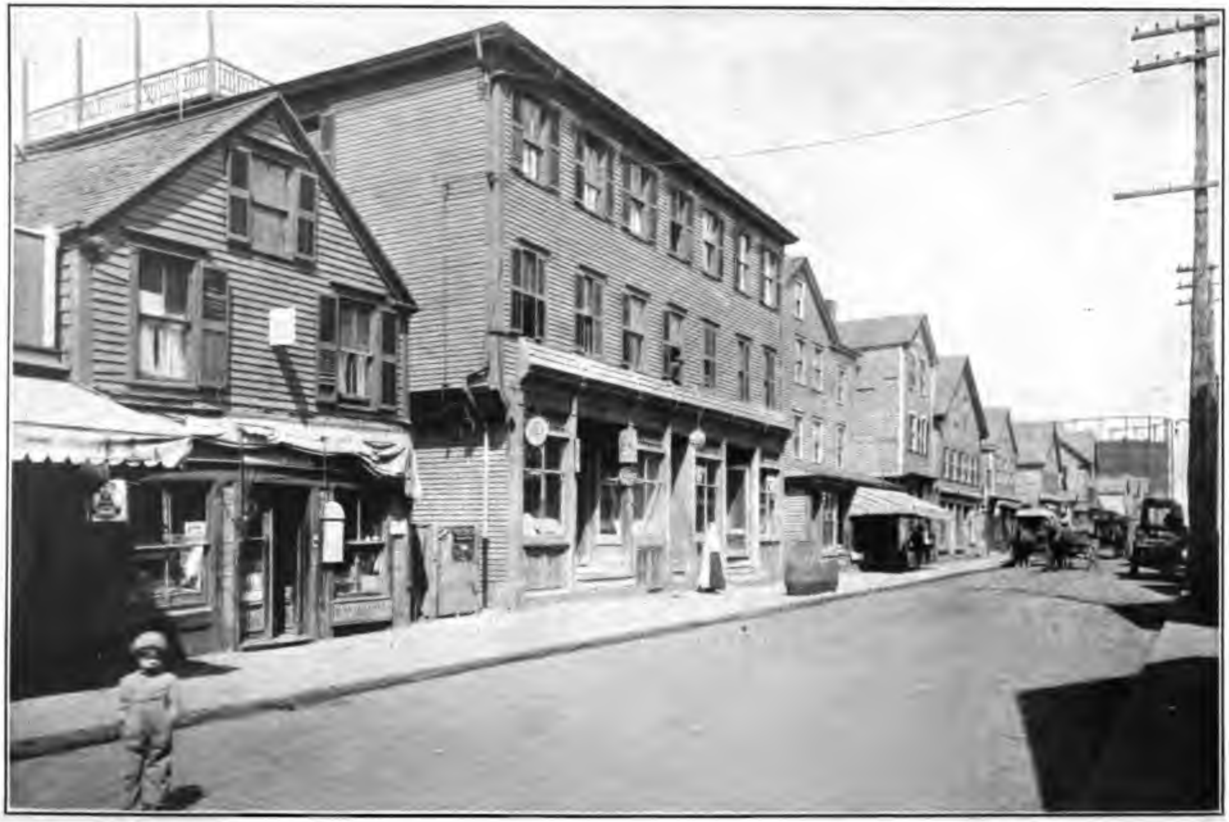

PLATE VIII.—OLD COTTAGES RAISED, WITH STORES BUILT BENEATH.

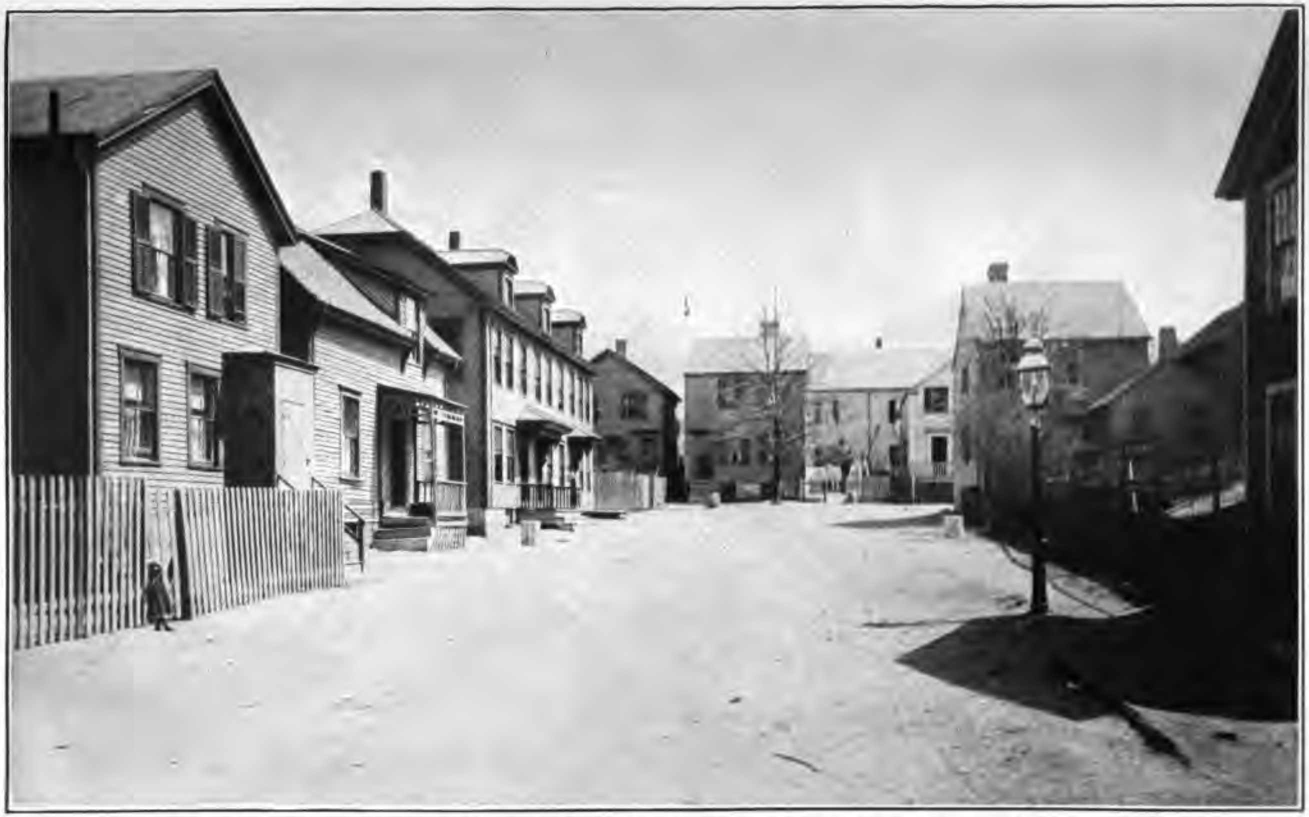

PLATE IX.—VIEW IN THE CENTER OF THE NATIVE BLACK SECTION; HERE THERE IS NO PAVING, AND PRIVIES ARE FOUND IN THE YARDS.

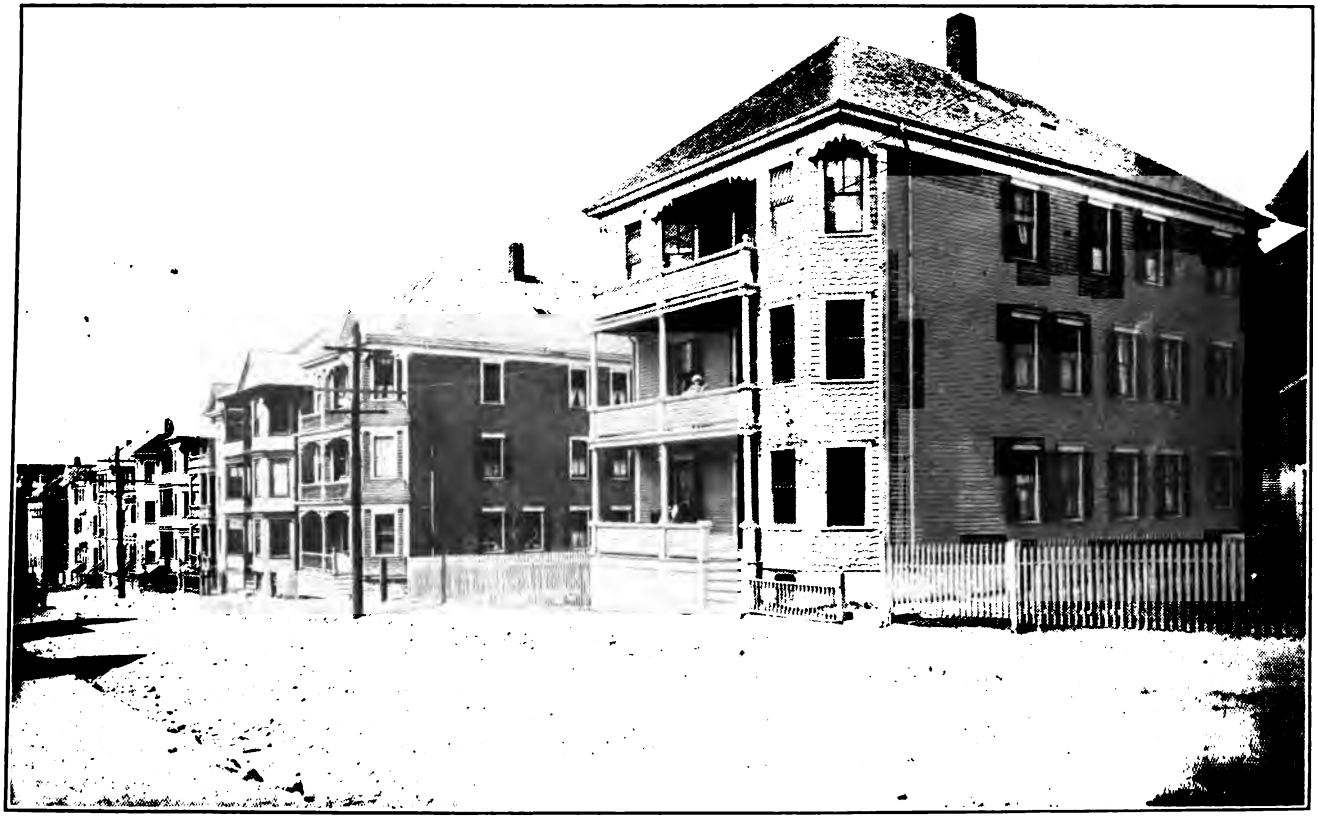

PLATE X.—NEW THREE- AND SIX-FAMILY TENEMENTS, AVERAGING FIVE ROOMS TO EACH APARTMENT.

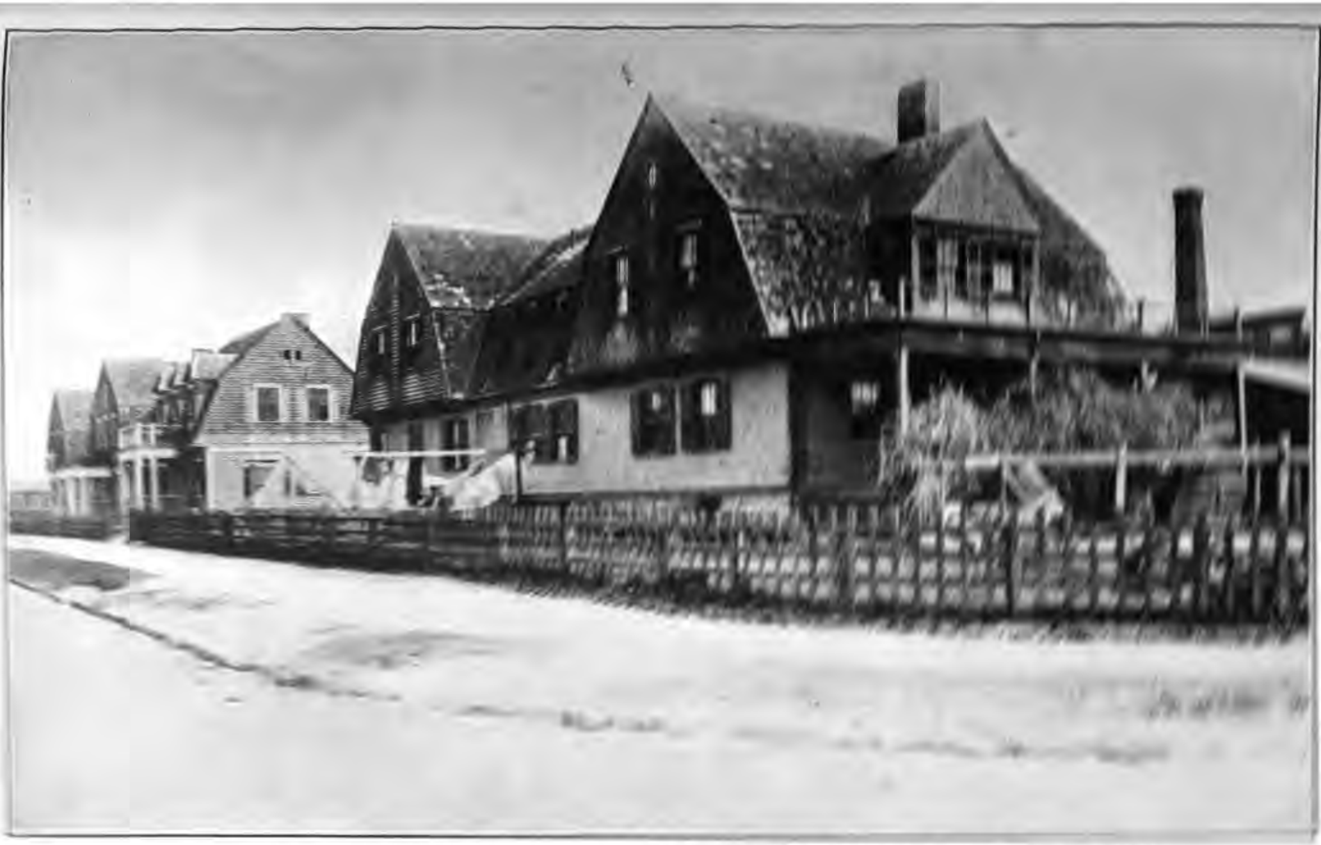

PLATE II.—MODEL MILL COTTAGES, CONTAINING SIX AND EIGHT ROOMS, IN "HOWLAND VILLAGE."

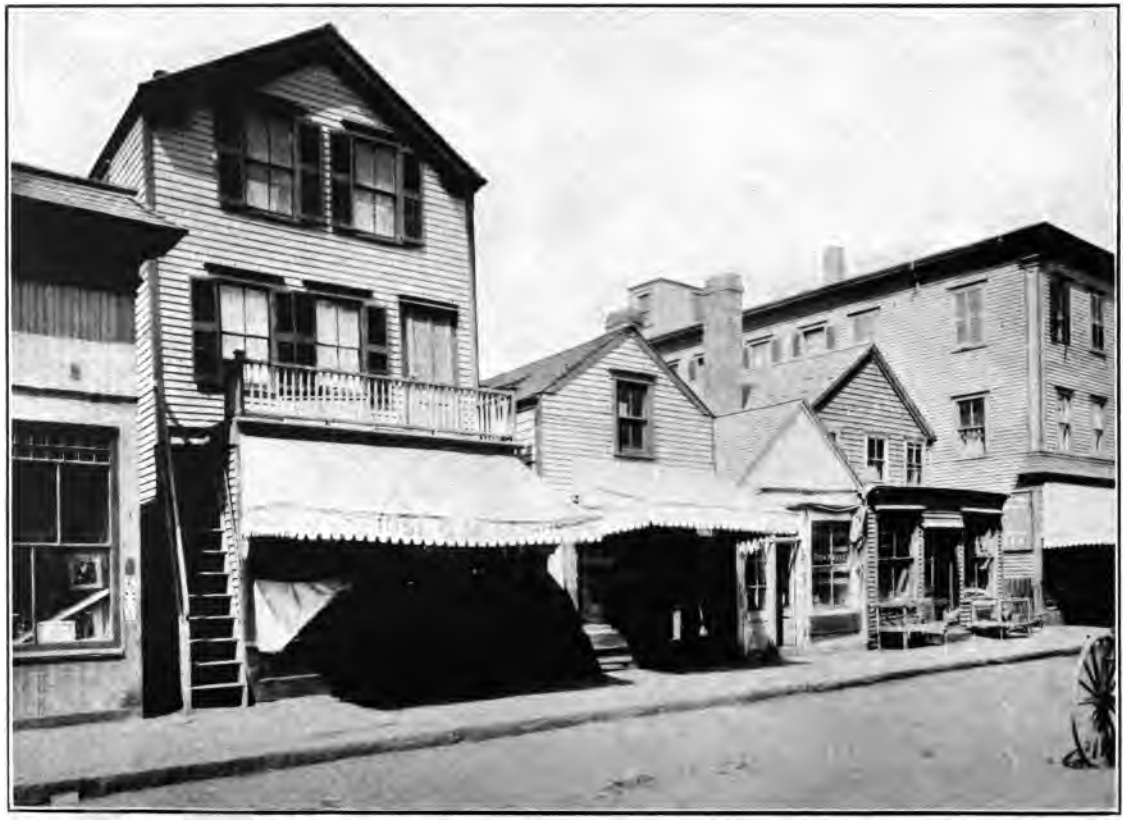

PLATE XII.—METHOD OF MEETING THE FIRE REGULATIONS WHICH REQUIRE TWO EXITS—ALMOST PERPENDICULAR STAIRS ON THE FRONT OF THE HOUSE.

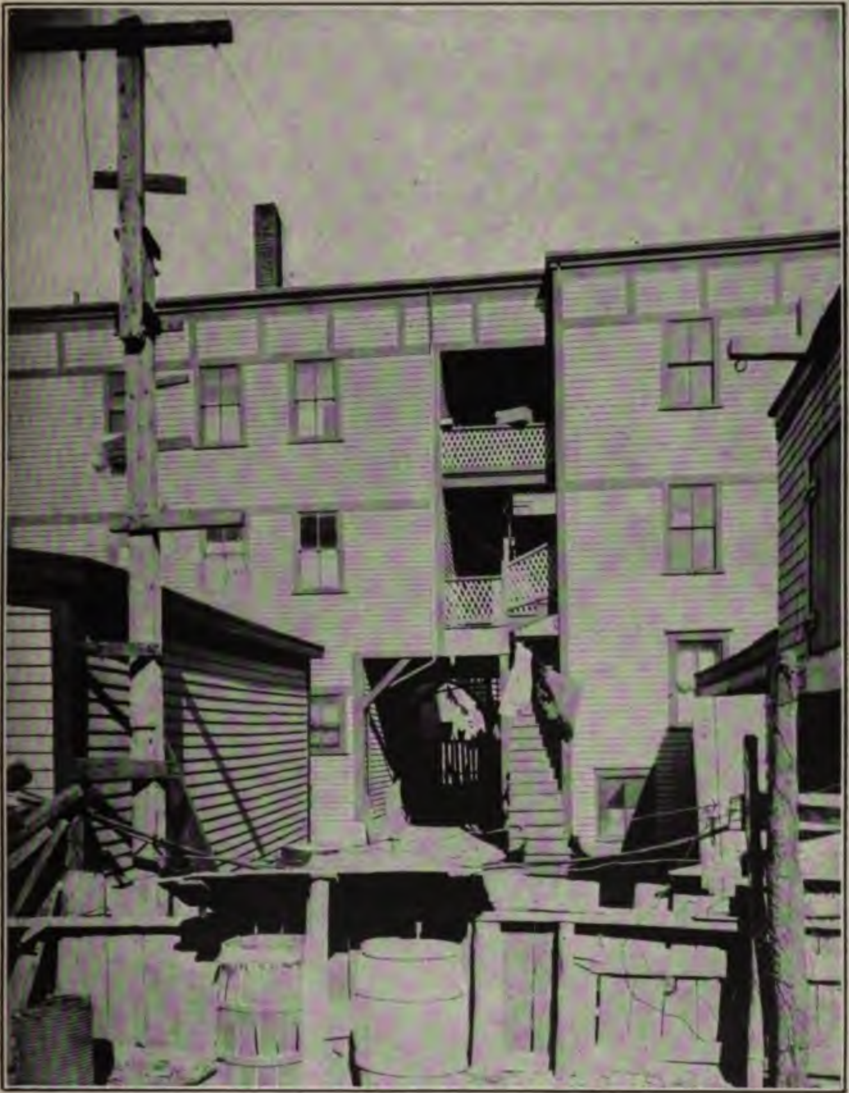

PLATE XIII.—ANOTHER WAY OF COMPLYING WITH THE FIRE REGULATIONS—TWO TENEMENTS USING A SINGLE BACK EXIT.

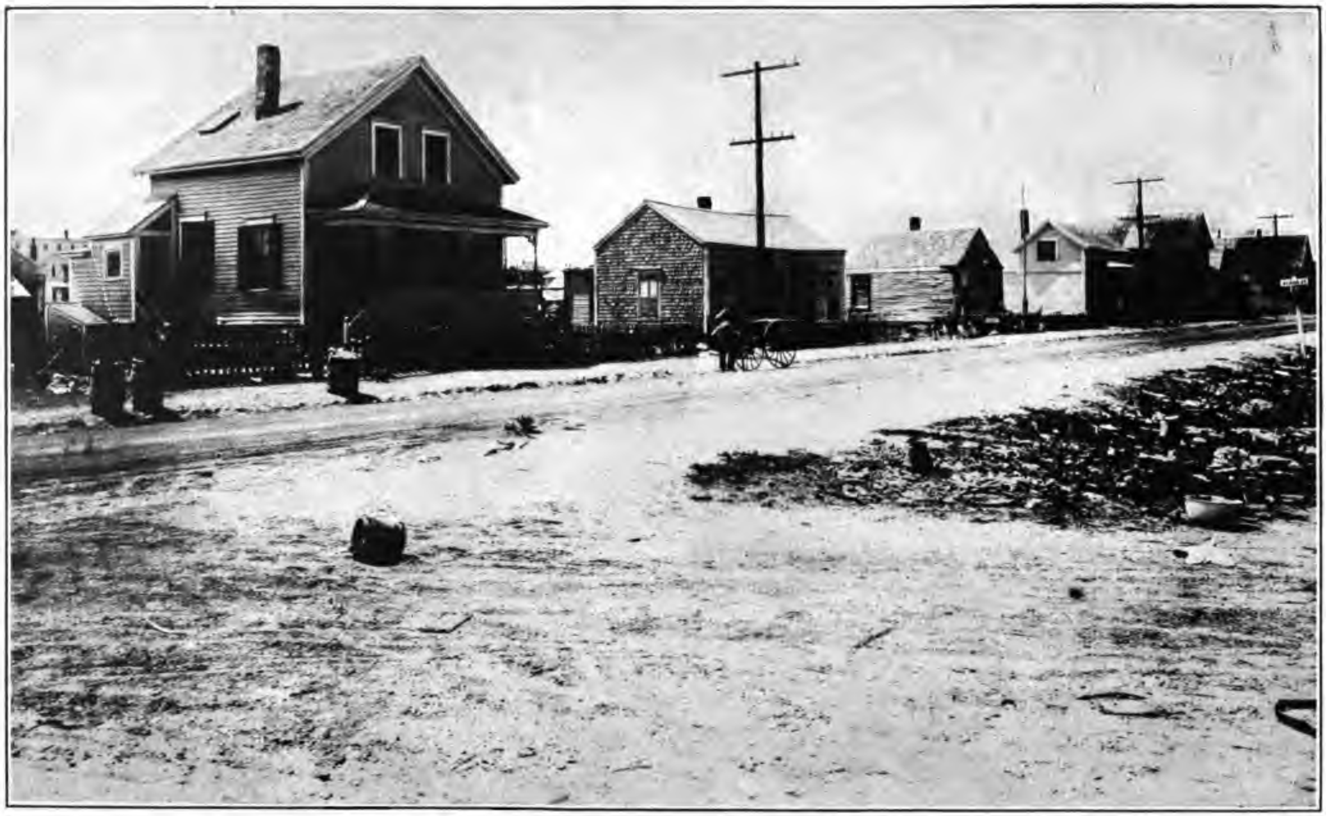

PLATE XIV.—DWELLINGS OPPOSITE A VACANT LOT USED AS DUMPING GROUND.

faced nor the wide court or yard between the rows was paved. Each contained two apartments of six rooms with a toilet for each in the hallway.

Another mill in the south end built 17 houses, some of which are shown in Plate IV. Some of these houses contained two or four tenements each, and three were large boarding houses. The toilets were in the cellar. These were the only mill houses and almost the only tenements in the city made of brick. They were built, not in rows, but facing outward around the four sides of an unpaved and undrained yard. They had recently been sold by the mill which built them.

The large block house was most common along the business thoroughfares, where the first floor was rented as a store. These houses were almost always of frame construction, and those in this district were very old and in bad repair. The hallways were dark and narrow. The toilets were usually in the cellar, reached by steep, narrow stairs at the back of the building. A four-story square tenement in the north end of the river section contained 56 persons above a fish market and a grocery store on the first floor. A building with two tenement houses east of it is shown in Plate V. There was one toilet on each floor in the hall. In all these block tenements the tenants seemed to belong to the drifting or transient element. In many of them lived groups of men without families—Greeks, Poles, Turks, and Syrians.

A particularly bad block is shown in Plate VI; it was two stories high and contained eight small tenements. At one time early in the winter, water stood a foot deep in the cellar.

An interesting house is shown in Plate VII. This had been formerly a seamen's boarding house. At the time of the study it was filled with a very transient population, crowded into small ill-planned apartments. One of the babies included in the study lived in this block. The street along the side of the building was not paved, and both the streets and the yard in the rear were littered with rubbish and garbage.

Many of the old cottages along the business streets had been raised and a store built underneath. This type is illustrated in Plate VIII, where a raised cottage is shown in the foreground, with a block house next to it and a number of raised cottages beyond. The picture was taken in a section sometimes called "Death's Hole."

THE WELL-TO-DO SECTION.

Many of the best residences in the city were quite as old as the dilapidated houses in the river section just described, but, substantially built in the beginning, they had been kept in good repair, and were still fine, spacious, old residences. The well-to-do section formed an L slightly to the southwest of the center of the city.

THE NATIVE-COLORED DISTRICT.

North and west of the well-to-do district and almost entirely within the angle of the L which it formed was a section of old houses inhabited at the time of the study by a colony of native-colored people. These houses were probably of about the same date as the houses in the river section and in the well-to-do section already described, but they resembled the dwellings of the former in their dilapidation and ill repair. As a rule they were of one or two stories; there were a number of larger blocks. The streets in this section were not paved. Dry privies were found in the yards.

A unique feature was the gay, picturesque coloring of the houses. In Plate IX the house at the end of the street was of a quiet buff color splashed with bright yellow, with bright blue blinds and steps. A brown house at the left had patches of red, and on the right—next to a dull blue cottage—part of a bright red house was visible.

On the streets near this court were several blocks which housed a large number of families. It is interesting to note that in New Bedford no evidence was found of discrimination against colored persons in regard to the scale of rent or the condition in which the dwellings were kept.

THE NEWER SECTION.

From the southern boundary of the city north to Tarkiln Hill Road, which marked the southern limit of the rural district, stretched the newer section of the city. Along the central part west of the river district stood many comfortable and well-kept-up one and two family houses, each surrounded by its own yard. Toward the south, and also toward the north, the type of house changed to the three and six family tenement house illustrated in Plate X. This type of house, the "three decker," was the prevailing type. These houses averaged five rooms to the apartment and were commonly built flush with the sidewalk. They were of cheap frame construction, had small porches, and varied only in minor details from one another.

The houses near the mills in the southwest part were older and the sanitary accommodations not so good. All had water piped to the kitchen or sink, but the toilets of the older houses were usually in the hallways outside the apartment. The newer houses of this section had a toilet and often a bathtub in each apartment. No dry yard privies and few cellar toilets were reported in this part of the city.

In the southwestern part of this section was "Howland Village," a group of mill-built houses which had been sold to individuals. This rised 52 one-family six and eight room cottages, located lanes, each having its own porch and garden space. provided with porcelain bathtubs. These cottages dif- the ordinary mill tenement not only in size and in the onveniences but also in attractiveness and variety of any of them were shingled, were attractively painted, sloping roofs and dormer windows. Each cottage com- view of Clarks Cove. See Plate XI.

the west of this section were many one and two family , inhabited for the most part by persons of the white race this country, and usually owned by the occupant.

LEGISLATION.

ing in New Bedford had proceeded with little if any regu- The only legislation that touched housing conditions was ed in certain ordinances relating to nuisances, and in a State in local regulations for fire protection. An ordinance of 1907 d that all dwellings of two or more tenements thereafter should have not less than two inside stairways reaching each n which there were living rooms. Under the Massachusetts 1901 plans for buildings of more than two stories and designed e as dwellings above the second floor must provide proper exits re stops approved by the city inspector of public houses. The achusetts law further required that proper exits must be pro- for boarding, lodging, or tenement houses which housed 10 or persons above the second story. In addition to these adequate for fire protection there was a State law allowing the local board ealth at its discretion to order vacated any dwelling which, by on of uncleanliness, excessive number of occupants, or any other se, was unfit for habitation. This law was permissive rather than igatory.

A more recent ordinance, which would not have had much influence conditions at the time of the study, provided that no frame build- g should be erected within 4 feet of the side or rear lines of a lot or a building on the same lot, or within 2 feet if the studding was lled in with not less than 4 inches of solid brick work. A new ousing law which passed the legislature in 1915 was wider in scope han the State law in force at the time of the study but of the same nature, its enforcement being left entirely to the discretion of the local board of health. According to this law the board of health was authorized to limit the number of occupants in any tenement or lodging house, and if the number were exceeded to order the premises vacated, not to be occupied again until the board was satisfied that its ruling would be complied with. The board was also permitted to make "such further regulations as to overcrowding, ventilation, and occupation of such houses and the cellars thereof not inconsistent with other laws, as it may deem proper."[1]

An illustration of a common method of meeting the fire regulations in the old remodeled houses is shown in Plate XII. Because two exits were demanded a steep, almost perpendicular staircase was built to connect with a narrow wooden porch along the front of the house. A novel way of meeting this requirement of the law, in the case of one of the larger houses, is illustrated in Plate XIII. Instead of adding a stairway, the front and rear houses were connected by porches; thus the occupants of each house had the use of two stairways. In case fire blocked the stairway in the front house, the occupants of this house could use the stairway at the rear; but if the rear stairway were destroyed by fire the persons in the rear house would have no means of exit, since they would have to pass over the porches to reach the stairways of the front house. In the case of another large block the only means of communication between the front and rear stairways was through a toilet located in the middle of the house and used by occupants in both front and rear tenements. For some of the large lodging and tenement houses fire escapes had been provided, but often they had only wooden landings. These methods of housing prevailed in the river section, where old houses had to be remodeled.

LAND CONGESTION IN RELATION TO HOUSING.

That there was no extensive lot overcrowding in New Bedford was due not to any building regulations but to the fact that in New Bedford the land famine which causes congestion in larger cities had not yet made itself felt. In almost every part of the city except in the business sections patches of unused land were still to be found.

The city had seven parks. The largest two, 88 and 94 acres, respectively, were located one in the extreme western and the other in the northern part of the city. Another park, 23 acres in extent, was located in the south end of the city. The common, covering 7 acres, was a small, green, open space a few minutes' walk from the business center. The other parks were small. Five playgrounds were located in different parks in the city.

REGULATION.

The housing problem in New Bedford may on the whole be condensed to one central question, that of regulation. It was the lack of regulation of the old houses that had allowed the conditions of dilapidation and disrepair to go on unchecked in the river district and parts of the colored district. The lack of regulation of new buildings might easily bring to New Bedford the same evils of bad planning and lot congestion which lack of control has brought to other cities. So far as was found in the study there were no windowless rooms in New Bedford, and there were only a few basement apartments in use. The question of congestion in New Bedford was still largely one of crowding within the apartment. There was no land famine; but if the city continues its rapid increase, legislation will be needed to prevent lot congestion. This legislation should not only regulate the building of new tenements but should also cover the proper repairing of old houses so that they may not fall into the insanitary condition now existing in the old districts of New Bedford.

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[1] Special acts of 1915, ch. 234.

FINDINGS OF THE STUDY.

For infants included in the study certain facts in regard to the dwellings or apartments in which they spent the greater part of their first year or of their lives [1] were noted on the schedule.

Among the homes of the babies in this study the five-room dwelling predominated, 37 per cent of the births occurring in families living in homes of that size. Four-room dwellings were next in number with 28 per cent, making 65 per cent of the births occurring in families that were housed in dwellings of four or five rooms. The rents, too, were not high, ranging from $2 to $3 a week for four- and five-room dwellings. Only 17 families lived in dwellings of two rooms, and only 1 family in one room. The last mentioned was a foreign family consisting of three persons.[2] One hundred and sixty-two, or 6 per cent, of the births occurred in families living in homes of eight or more rooms.

These figures in regard to number of rooms must be taken in connection with the number in the family before any idea of the adequacy of the living quarters of a family can be secured. In the five-room dwellings, for instance, there might be 3 or 10 in the family; the average number of persons per room is the best measure of overcrowding.

Twelve hundred and fifteen, or 46 per cent, of the births were in families having less than one person to a room; the infant mortality rate for this group was 97. For the group which averaged less than two but more than one person to a room the infant mortality rate was 146; this group numbered 1,262, or 47 per cent of the whole number. Six per cent of the families lived in congested conditions, viz, with an average of from two to five persons per room; the infant mortality rate for this last group was 222. There were 34 instances in which the number of persons per room was not reported. (See Table XXV.)

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[1] For stillbirths the home scheduled was the one in which the mother spent the greater part of her pregnancy.

[2] General Table 30.

TABLE XXV.—*Births in selected year, infant deaths, infant mortality rate, and number and per cent of stillbirths, according to average number of persons per room.*

Average number of persons per room.[a]	Total births.	Live births.	Infant deaths.	Infant mortality rate.[b]	Stillbirths.	
					Number.	Per cent of total births.[b]
All classes	2,662	2,587	337	130.3	75	2.8
Less than 1	1,215	1,175	114	97.0	40	3.3
1 but less than 2	1,262	1,229	179	145.6	33	2.6
2 but less than 5	151	149	33	221.5	2	1.3
Not reported	34	34	11			

[a] Excluding infants born during selected year.

[b] Not shown where base is less than 100.

The mortality in these groups must not be considered as caused solely by housing congestion. The families living in conditions of congestion were undoubtedly those with the lowest earnings and the lowest standards of living. Infants in these families were likely to be handicapped by other factors, discussed in the preceding sections of the report, such as artificial feeding or lack of care owing to the employment of the mother outside the home. All these factors must be kept in mind in considering the above rates.

Nativity and housing.

The babies of foreign-born mothers lived usually in more crowded quarters than the babies of native mothers. This condition was caused not so much by the fact that the foreign-born mother rented a smaller dwelling as by the fact that the family was larger. The four- and five-room dwellings were most common among both the nativity groups; but while 64 per cent of babies of native mothers lived in dwellings averaging less than one person to a room, only 38 per cent of the babies of foreign-born mothers had the advantage of similar housing conditions.

Housing in "unfavorable" area.

Practically all the poor housing in New Bedford was found in the "unfavorable" area—precincts 1, 2, 3, 13, and 17.[1] The greatest congestion within the home also occurred in this section. While 57 per cent of the births outside this area occurred in families who lived under comfortable conditions, viz, with less than one person per room, only 37 per cent in this area were in families enjoying like conditions. Seventy-eight per cent of the births occurring in families with two or more [2] persons to a room were found in this area.

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[1] Wards and precincts according to ward and precinct lines existing at the time of the study.

[2] Derived from Table XXV and General Table 31.

ILLEGITIMACY.

Infants of unmarried mothers in the city of New Bedford were made the subject of a special study. The conditions under which they live differ from those of a normal family and, though the facts concerning them were not comparable to those concerning infants born in wedlock, the mortality rate and the social and economic conditions surrounding these children are of particular interest.

In the State of Massachusetts the certificate of birth contains no statement in regard to legitimacy. It is contrary to law to return any facts on a birth certificate about the father of a child of illegitimate birth unless both father and mother consent in writing. Not even the name of the father may be made a matter of record. Consequently the omission of the father's name in most cases [1] indicates that the birth was illegitimate. The total of registered illegitimate births in New Bedford in the selected year was 104, exclusive of 3 foundlings for whom the facts could not be ascertained. The proportion of illegitimate in the total number of registered births was 2.9 per cent. This is a relatively low percentage compared with percentages for foreign countries.[2] Little American material is available on this point.[3]

COMPARATIVE RATES FOR MASSACHUSETTS CITIES.

A compilation of returns of registered births filed in the statehouse at Boston shows the percentage of illegitimate to total registered births for the 12 Massachusetts cities with a population (in 1910) of 50,000 and over. New Bedford had the highest percentage of illegitimate births of any city except Boston. The figures quoted are for the year 1914.

	Per cent.
Cambridge	0.1
Lawrence	.9
Somerville	1.1
Lowell	1.5
Springfield	1.5
Fall River	1.6
Brockton	1.8
Lynn	1.8
Worcester	2.1
Holyoke	2.8
New Bedford	**2.9**
Boston	3.9

The illegitimacy rate for New Bedford for 1914 was the same as for 1913.

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[1] In the course of securing information from the mother, several exceptions to this rule were found.

[2] Statistique Internationale du Mouvement de la Population, 1901-1910.

[3] A report entitled "Illegitimacy as a Child-Welfare Problem, Pt. 2: A Study of Original Records in the City of Boston and the State of Massachusetts," is in course of preparation by the Children's Bureau.

SECURING OF DATA.

Complete schedules were obtained for 54 of the total of 104 illegitimate births in New Bedford, and for 9 more part of the information was secured, leaving 41 for whom no data could be obtained. The difficulty in securing schedules from the unmarried mothers was due in part to the large number of removals from town of mothers of this group.

INFANT MORTALITY RATE FOR INFANTS OF ILLEGITIMATE BIRTH.

Among the 63 births investigated 2 stillbirths and 18 deaths occurred; in 2 cases it was not reported whether the child survived the first year or not. The infant mortality rate for this group was therefore 305. If the entire group of 101 live births is compared with the 35 known deaths in this group as shown by death certificates, the infant mortality rate was even higher, 347. This rate was over two and a half times as high as the rate for infants of legitimate birth.

Several causes are responsible for the excessive mortality among infants of illegitimate birth. The mother often does not have proper care during pregnancy. After confinement she is in many cases obliged to seek employment to support herself and her child. Many unmarried mothers, in a desire for concealment, arrange to have the infant cared for away from home. Often the child is placed in a cheap boarding home or in an institution, where his chances of survival are diminished. In either case the infant is deprived of breast feeding and a mother's care.

CARE IN CONFINEMENT.

The care received by the unmarried mothers in confinement is shown in the following table:

Total	104
In hospitals	22
In almshouses	2
In private home, by physician	42
In private home, by midwife	22
In private home, by neighbor	4
In private home, no attendant	2
Report of care not given	10

DISPOSITION OF INFANTS.

Of the 63 infants of illegitimate birth for whom partial or complete schedules were obtained, 6 were stillborn or died in the first two weeks of life; of the remaining 57, 9 lived with both parents, 28 remained with the mothers, 2 were supported by the fathers in the fathers' parental homes, and 18 were placed in institutions, boarded out, cared for by relatives, or adopted. The mortality rates for each class were high, but the numbers were too small to admit of comparison by groups. The number of removals of these infants before the final disposition as reported above was made may have been a factor in the high mortality among them. There were 36 shifts made. involving 27 babies.

NATIONALITY.

Of the 63 infants for whom nationality data were obtained, 25, or two-fifths, were born to native mothers. Five each were born in the groups of Portuguese white, Portuguese Negro, and French Canadian; and the rest were born in the Polish, English, Irish, and German groups. The large proportion of native white among these mothers is noteworthy, since the percentage of native white among the mothers of legitimate births was only 28.

COURT ACTION.

The father of a child of illegitimate birth, after paternity has been established by a court, is liable under the law of Massachusetts in force since July, 1913, to pay confinement expenses and to "contribute reasonably to the support of the child during minority." Court proceedings were begun in the cases of 16 of the 104 illegitimate births in this study. Five were not brought to trial because the defendant could not be found. In 9 of the remaining 11 cases some provision for the child was made. A very small percentage, then, received aid through court action. Many mothers, of course, do not resort to the court because of the publicity involved and so lose the opportunity of getting such aid as might enable them to keep their children with them.

AGE AND OCCUPATION OF MOTHER.

A classification by age and occupation of mother affords an indication of the special circumstances in which these children of illegitimate birth lived during their first year. In 44 per cent of the 63 cases of illegitimate birth for which information was secured, the mothers were extremely young—under 20; and in only about 16 per cent were the mothers over 30. In 35 cases, or 56 per cent, the mothers worked in cotton mills; in 8, in domestic service; and the mothers of the rest were employed in 13 other occupations. In 5 cases employment was not reported. Only 1 was reported to have had no gainful employment during the year before the child's birth. Ten mothers did not return to work the year after the birth of the infant. The father's occupation was determined in 52 of the cases scheduled; in 11 instances the father worked in the mills, in 2 cases the father did not work, and in the remaining cases various occupations were reported.

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[1] Acts of 1913, ch. 563 (in force since July, 1913).

[illegible]ARY AND CONCLUSIONS.

[illegible] a manufacturing city whose chief industry is [illegible] proportion of the population of the city [illegible] Portuguese and French Canadian; a [illegible] worked in the mills. Wages in New [illegible]

[illegible] MORTALITY RATE.

[illegible] New Bedford included a total of [illegible] mortality rate for the [illegible] live births [illegible] compared with the rate of 180 for [illegible]. The mortality rate in [illegible] the so-called "unfavorable" [illegible] of 94.6 for the rest of the city [illegible] of the colonies of foreign [illegible] proportion of the French Can-[illegible] which the infant mortality [illegible]

[illegible]

[illegible]

[illegible]

times as high as in Saginaw; in both the textile towns, Manchester and New Bedford, the rate from gastric and intestinal diseases was high, in Manchester even higher than in New Bedford.

The rate from these causes was over three times as high for infants of Portuguese-white mothers as for infants of native mothers.

The mortality from respiratory diseases was higher in New Bedford than in any other city studied by the bureau, although only slightly higher than for Johnstown and Manchester. Practically all the excessive mortality from respiratory and gastric and intestinal diseases was due to the heavy mortality among infants of Portuguese-white mothers.

The rate for deaths from causes peculiar to early infancy was lower in New Bedford than in any city previously studied by the bureau.

ATTENDANT AT BIRTH.

Seventy-three per cent of the births of the study were attended by physicians and 23 per cent by midwives. Among the foreign born 30 per cent of the births were attended by midwives. The Portuguese white had the largest proportion of confinements thus attended.

FEEDING.

The average mortality among artificially fed infants was approximately four and one-half times the rate among infants breast fed. A great difference was shown in the rates for artificially fed infants of native and of foreign-born mothers, the rate for the latter being nearly one and one-half times as high as the rate for the former.

FATHER'S EARNINGS.

Fathers of 41 per cent of the babies in this study worked in the cotton mills during the greater part of the year following the babies' births. Three-fourths of the infants were born in families where the father earned less than $850 a year.

In the group of infants whose fathers earned less than $450 a year, comprising over one-fifth of all the births, the infant mortality rate was 201.9. With one exception the rate decreased as the fathers' earnings increased, to the low rate of 59.9 for infants whose fathers earned $1,250 or over. In the lowest earnings group 1 live-born baby in every 5 died before reaching its first birthday; in the highest earnings group only 1 in 17 died.

GAINFUL EMPLOYMENT OF MOTHER.

Forty-seven per cent of the births were to mothers gainfully employed during the year preceding the baby's birth and 41 per cent to those so employed during the year following. The lower the

and high mortality rate, were omitted from New Bedford, the rate would have been only 103.7, or much more nearly like that of Brockton.

A second point of contrast is found in the much larger proportion of the births in New Bedford that occurred in the lower economic groups. Three-eighths of the births occurred in families in which the father earned less than $550; in Brockton only one-eighth of the births were in such families. Twenty-five per cent of the births in New Bedford were in families whose fathers earned $850 or over; in Brockton 45 per cent earned over this amount. Evidently, since the infant mortality rate falls as the father's earnings increase, the infants in Brockton had a much better chance of survival than those in New Bedford.

A third point of difference lies in the proportion of mothers gainfully employed away from home. In Brockton mothers of less than 4 per cent of the infants were so employed during the year following the baby's birth; while in New Bedford mothers of 22 per cent were so employed. During the year preceding the birth, 12 per cent of the mothers were gainfully employed away from home in Brockton as contrasted with 33 per cent for New Bedford.

The difference in the rates for the two cities is the more remarkable, since in type of feeding given to the babies New Bedford shows a larger proportion exclusively breast fed in each month of life.

These are the principal points of difference: New Bedford had lower standards of living, a larger proportion of mothers gainfully employed, a more difficult problem of assimilation of foreign elements. These differences reflect themselves in the excessively high mortality from gastric and intestinal diseases (nearly four times that of Brockton) and from respiratory diseases (over twice the Brockton rate). Deaths from these causes are easily preventable; with proper care and feeding most of them would not occur. Relatively, New Bedford has a much larger and more difficult problem than Brockton in reducing its infant mortality rate.

APPENDIX.

METHOD OF PROCEDURE.

Scope of inquiry.

In the law creating the Children's Bureau, passed by the Sixty-second Congress, infant mortality was specified first in the list of subjects to be studied. The mortality among infants under 1 year is higher than mortality at any other period of life except old age. The report of the Census Bureau on mortality statistics showed that in 1910 for every 1,000 live births registered in the death-registration States there were 124 deaths under 1 year of age.[1] In 1915, in the birth-registration area, including the New England States, New York, Pennsylvania, Michigan, Minnesota, and the District of Columbia, for every 1,000 live births registered there were 100 infant deaths. In these States the infant-mortality rate varied from 70 to 120 for the State as a whole, while for cities in these States having in 1910 a population of 25,000 or over the range of the rates was much greater—from 54 in Brookline and Malden, Mass., to 196 in Shenandoah, Pa.

TABLE I.—*Infant mortality rates for States in the birth-registration area: 1915.*[a]

State.	Infant mortality rate.	State.	Infant mortality rate.
Connecticut	107	New Hampshire	110
Maine	105	New York	99
Massachusetts	101	Pennsylvania	110
Michigan	86	Rhode Island	120
Minnesota	70	Vermont	85

[a] U. S. Bureau of the Census, Birth Statistics, 1915, p. 10, Washington, 1917.

It is evident from these figures that conditions in some States and in some cities are much more favorable than in others. On the causes of low or high mortality the figures of the Census Bureau throw little light. If inquiries were made in restricted areas and information on the physical, social, economic, and civic conditions were secured for all births and for all deaths under 1 year it would be possible to determine the underlying causes that favor a low mortality or produce a high rate.

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[1] The rate is too high since the registration of births was incomplete in these States; in many of them it was very deficient. Figures are shown for the death-registration States of 1911 and are for 1910, except in Kentucky and Missouri, where births and deaths are for 1911.

With this object in view the Children's Bureau selected a number of cities that offered contrasts in economic, industrial, and social conditions in which to make intensive studies of the conditions of infant life and infant mortality. The choice of the first cities to be studied was limited for practical reasons to cities with accepted birth registration, on account of the facilities afforded by the birth records for ascertaining the residence of the mothers to be interviewed. It was further necessary to choose cities of such size that they could be covered thoroughly within a reasonable time by the few agents available for the work. Certain characteristics of the cities chosen are summarized in Table II. All were manufacturing cities, the populations ranging in 1910 from 50,000 to 100,000. All had a large foreign element. In addition, judging by the provisional figures available when the choice was determined upon, every city with the exception of Brockton had a high infant mortality rate.

TABLE II.—*Population in 1910, infant mortality rates 1910 and 1915, percentage of adult population foreign born, principal foreign nationality, and principal industry of the cities chosen for infant mortality studies.*

City.	Population in 1910.	Infant mortality rates.		Percentage of adult population over 20, foreign born, 1910.	Principal foreign nationality.[c]	Principal industry.
		[a] 1910	[b] 1915			
Johnstown, Pa.	55,482	165	116	39.9	Varied Slavic [d]	Iron and steel.
Manchester, N. H.	70,063	193	150	56.1	French-Canadian	Cotton textiles.
Brocton, Mass.	56,878	99	82	37.3	Lithuanian	Shoe manufacture.
Saginaw, Mich.	50,510	145	101	33.7	German	Varied industries.
New Bedford, Mass.	96,652	177	143	59.0	Portuguese	Cotton textiles.
Waterbury, Conn.	73,141	149	143	50.5	Italian	Brass manufacture.
Akron, Ohio	69,067	123	....	26.0	German	Rubber factory.

[a] Figures published by the U. S. Bureau of the Census, Bulletin 109, Mortality Statistics, 1910, pp. 18–19, based on provisional figures for births. The rate for Akron, Ohio, was furnished by the Ohio State registrar.

[b] U. S. Bureau of the Census, Birth Statistics, 1915, Washington, 1917. The rate for Saginaw, Mich., was bosed on State (final) figures for births.

[c] Principal foreign nationality of mothers of infants included in the infant mortality studies.

[d] No particular Slavic group of sufficient importance to mention separately.

Infant mortality rate.

An infant mortality rate expresses the probability of a live-born infant dying before his first birthday and is usually stated as the number of deaths under 1 year per 1,000 live births.[1]

The usual approximate method of finding the infant mortality rate for a certain area is to divide the number of registered deaths of infants under 1 year of age occurring in a given calendar year by the number of registered live births in the same year. The number of deaths thus secured includes not only deaths of infants born in the same calendar year, but also some deaths of infants born in the preceding year or in a different area; it excludes deaths of infants included in the group of births if the death occurred either in a different area or in the following calendar year. The two numbers—of deaths and births—do not refer to the same group of infants. To avoid this inaccuracy, the method employed by the Children's Bureau in all studies has been to follow each infant born in a given selected year in a certain area for a period of 12 months. The deaths among these infants are then compared to the births. In this way the deaths include no infants not included in the births and the true probability of dying in the first year of life is secured.

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[1] Stillbirths are omitted from both births and deaths.

The chief difficulty, in practice, in computing infant mortality rates arises from the incompleteness of registration of births and deaths. On account of differences and changes in completeness of registration, it is not always safe to compare infant mortality rates in cities with those in country districts; in one State with those in another; in one city with rates in another; or even to compare rates in one year with those for preceding years in the same city. If the per cent of omissions of deaths under 1 year of age is equal to the per cent of omissions of births, the infant mortality rate, though based on incomplete data, will still be correct. In general, however, death registration is better than birth registration. If birth registration is more defective than registration of infant deaths, the infant mortality will be too high. Inaccuracies will affect not only the general rate for a given area but may affect also the comparability of the rates for different classes within the area. In an analysis of births and deaths by race and nativity classes, if the degree of completeness of registration varies with the different classes, the rates found by dividing the deaths by the births may not be comparable. For the purpose of these investigations comparable rates are essential.

It is not of so much importance that the rate secured shall characterize general conditions of infant mortality for a given area as that rates for the different nativity classes, earnings groups, and other subclasses shall indicate the true differences for the area in the incidence of infant deaths. There are two methods of treating the original data to make them more serviceable for this purpose. One is to exclude the least accurate material, where it is known to be incomplete or inaccurate; the other is to make a selection of material on some unbiased basis and use the data selected as representative of the city. An alternative policy is so to supplement the original data that the figures used include all the evidence applicable to the groups studied in the city.

Certain groups for which the information is inaccurate or incomplete have been excluded in all the studies made by the bureau. The groups for which the rates are most open to question and most difficult to obtain are illegitimate births, births in families that have moved away, and births to nonresident mothers.

The first of the groups that have been excluded from the general analysis is the group of illegitimate births. The information secured is probably not so complete as for legitimate births; furthermore, it relates to an abnormal family group. Special studies of mortality rates for illegitimate children have been made for one or two cities, but the data can not be considered so satisfactory as those presented in the general analysis.

Births to mothers who moved away in the first year of the infant's life form the second group of exclusions. The information as to the number of deaths that occurred in this group is not complete. Obviously, if the infant moved away from the city after the first few weeks or months of life, his death, if he died, would not be registered in the city. Deaths registered in the city of infants born to mothers who later moved away also have to be excluded. Otherwise the rates would be biased by the exclusion of live births only, with no exclusion of infant deaths to correspond.

A third group of exclusions is the births to nonresident mothers. These were excluded not only on the ground that in most cases the infant did not live in the city during his entire first year of life but also on the ground that the conditions under which nonresident mothers lived prior to coming to the city may be different from those of the average mother in the city. In order to make the rate as characteristic of the city as possible these births were excluded.

Births to mothers who could not be found were also excluded. In such cases the probability was that the mother had moved away. No reliable information could be secured about these cases and hence the only safe policy was to exclude them.

In practice, since the agent's visit always was made after the first anniversary of the birth of the child—in some cases a year or more afterwards—births were excluded if the mother had moved away from the city prior to the agent's visit and could not be found at this time.[1]

The data submitted in the report apply, therefore, to births in the city during the selected year to resident married mothers who lived there during the child's first year and were found there at the time of the agent's visit.

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[1] The rulings in two special cases might be mentioned: (1) If the mother died during the child's first year, the birth was included if the infant (or, in case of death, his family) had lived in the city during the first year after his birth. (2) In a few cases mother and child were away from the city for a part only of the child's first year, and later moved back and were found by the agent. In the cities first studied agents were not instructed to inquire as to continuous residence in the city. If, however, the fact that the mother had moved away for a period was noted, the birth was excluded in tabulation if the absence from the city had been three months or more.

Though the records for births to resident married mothers are much more complete and satisfactory than for all births in the city, there still remains the difficulty that differences in the completeness of registration for different groups may affect the comparability of rates. If all births and all infant deaths were registered, the rates for these groups would be correct. It was found, however, in examining the birth and death certificates that occasionally a death had been registered of an infant born in the city whose birth had not been recorded. Obviously, the more incomplete the birth records are the more frequently such cases would occur.

There were three possible methods of meeting this difficulty. The first was to accept these death records and treat them as if the births had been recorded. The second was to make a selection of births and include only deaths among the births selected, the obvious basis of selection being the fact of registration of birth. The third was to attempt to complete the records of births and of deaths by a canvass. The first method was rejected in favor of the second and third, on the ground that the inclusion of all these death records would tend to exaggerate the mortality rates.

The second method was followed in Manchester, Brockton, and New Bedford. In Brockton and New Bedford as in other cities in Massachusetts a special canvass was made to check up registration of births during the preceding year. Consequently, in these cities a birth might have been registered either by the physician soon after the birth or by the special canvasser on his visit. All births recorded, whether regularly registered or added by this special canvass, were treated as registered for the purposes of this study.

The third method, or a modification of it, was followed in the other cities studied. In Johnstown, Pa., the original plan was to limit the investigation to registered births in 1911. But during the progress of the investigation it was found that many births to Serbian mothers escaped registration, and it was thought that this group was too important to be omitted entirely. Accordingly, the birth records were supplemented by the baptismal records of the Serbian church, and a canvass was made of the principal Serbian quarter. Agents were instructed to take schedules for any infants found who were born in Johnstown in 1911, even if the birth had not been recorded. In Saginaw the registered births were supplemented by the births secured in various ways—from death certificates, baptismal records, through neighborhood inquiries, and other sources. The agent calling on each mother inquired if there were other children in the neighborhood of about the same age. By these means 116 births to resident married mothers were added. Three unregistered deaths were added to the 113 recorded.

With the general plan of the investigation determined, the more important points in the detailed procedure were as follows: The first step was to copy the birth certificates for the year selected; then the death certificates for the year selected and the year following were examined and the facts as to birth and death for infants born in the year selected were transferred to the schedules. These records usually gave the address of the mother, though not in all cases the present address. In cities where a canvass was made, the actual address of the mother was found directly. If the mother had moved, the agent attempted to learn from the neighbors her present address in the city or whether she had moved away. Most of the information contained in these reports is derived from the answers secured from the mothers interviewed. Since the bureau has no power nor desire to compel answers, the information secured was based on the voluntary statements of the mothers. To the willingness of the mothers to answer all questions and to cooperate in every way is due the completeness of the records; upon this completeness the value of much of the information depends.

In comparing, then, the rates for the group included in the study with the rates for the corresponding calendar year computed in the ordinary manner, the following points must be borne in mind:

First. In rates computed by the ordinary method the deaths and births occur in the same year. In rates for the bureau studies the births in a selected year are compared to the deaths among them. The deaths are scattered over a period of two years, including the selected year and the year following.

Second. Illegitimate births are excluded from these studies.[1] The death rate for illegitimate births is usually considerably higher than the average rate. The rates as shown in these studies, therefore, may be expected to be somewhat lower than the rates as usually computed.

Third. Births to nonresident mothers are excluded in order to make the rates as characteristic as possible of the conditions of the locality studied.

Fourth. Births of infants whose mothers moved away during the year following the birth and deaths that occurred in this group are excluded, because in the absence of data on age at removal it is impossible to use the figures except on the basis of arbitrary assumption. Deaths in the city of infants born elsewhere are also excluded because there is no information on age at migration. This policy, of course, excludes infant deaths in foundling asylums, if the birth did not occur in the city.

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[1] Except for Johnstown, where illegitimate births were included.

Fifth. In some of the cities rates are based on the deaths among the registered births. Infant deaths where the birth was not recorded have therefore been omitted, to correspond with the probable omission of infants surviving the first year of life, whose births were not recorded.

Finally, in other cities the birth records have been completed or supplemented by a canvass or by other means. In these cases it is easy to show from the incompleteness of the official records that the rates computed in the usual way on the basis of these records are much less accurate than the rates given in these studies for the included groups.

Live births excluded in New Bedford.

With the foregoing explanation of the method of procedure in mind the significance of the exclusions and the rates for the excluded groups may be more easily grasped. During the selected year there were 3,542 known live births in New Bedford; of these, 346 had moved out of town and no trace of 441 could be found, a total of 787. One hundred and fifty-three of this group died in the first year, giving a rate of 194.4. These deaths registered in the city probably do not include all deaths in this group, since some infants may have died after leaving New Bedford and their deaths have not been recorded in the city.

In 14 instances the births were excluded on account of incomplete or unreliable data; in 4 of these cases the infant died.

Among the 59 live births excluded on account of nonresidence of the mother, 5 deaths occurred in the city. In most cases these mothers probably left the city soon after the birth of the child. The mortality rate, therefore, probably represents an understatement of the true rate for this group.

Forty-nine births to mothers resident in the city both at the time of the infant's birth and at the agent's visit were excluded on the ground of illegitimacy. Fourteen, or over one-fourth, of these babies died before the first birthday. This number, 49, does not represent all the illegitimate births in the city, since others were excluded on grounds of nonresidence or lack of information.

Forty-six births were excluded on the ground that the birth had not been registered. Six of these babies died under 1 year of age. The mortality rate for this group was almost exactly equal to the rate for the births included in the study. Because no attempt was made to supplement records of births by a canvass of the city it was deemed advisable not to include these unregistered births.

TABLE III.—*Registered and unregistered live births in New Bedford, infant deaths, and infant mortality rate for births included in and for births excluded from detailed analysis, by reason for exclusion.*

Inclusions or exclusions and reasons for exclusion.	Live births.			Infant deaths.			Infant mortality rate.[a]		
	Total.	Registered.	Unregistered.	Total.	Births registered.	Births unregistered.	Total.	Births registered.	Births unregistered.
Total known live births	3,542	3,493	49	519	513	6	146.5	146.9	....
Total live births included	2,587	2,587	....	337	337	....	130.3	130.3	....
Total live births excluded	955	906	49	182	176	6	190.6	194.3	....
Reasons for exclusion:									
Nonresidence or lack of information: Total	860	857	3	162	162	....	188.4	189.0	....
Not found	441	441	....	84	84	....	190.5	190.5	....
Data incomplete or unreliable	14	14	....	4	4	....	....	....	....
Nonresident	59	56	3	5	5	....	....	....	....
Removed	346	346	....	69	69	....	199.4	199.4	....
Illegitimacy	49	49	....	14	14	....	....	....	....
Nonregistration of births	46	....	46	6	....	6	....	....	....

[a] Not shown where base is less than 100.

From these figures light may be thrown upon the completeness of birth registration in New Bedford. Of the total of 3,542 live births, 49 were unregistered, giving a percentage unregistered of 1.4 per cent. This percentage of course would be an understatement, since a few additional unregistered births might have occurred.

The infant mortality rate for the births included in the study was 130.3. For the excluded groups the rate varied with the reason for exclusion. The rate for illegitimate births was very high. The rate for nonresident was relatively low, but probably not all the deaths were included. The rate for cases where the mother was not found or had moved away from the city was considerably higher than the rate for the selected group but probably less than the true rate. The rate for the excluded group as a whole, 190.6, is not significant unless taken in connection with the reasons for exclusion. The rate for all live births in the city, both included and excluded, was 146.5, but this rate, too, is not so significant in many ways as the rate for the group included in the study.

Stillbirth rates.

Stillbirth rates were formed by dividing the number of stillbirths by the total number of births, live and stillbirths. A stillbirth is defined as a dead-born issue of seven or more months' gestation. Miscarriages, or dead-born issues of less than seven months' gestation, were excluded.

A policy of exclusions was followed similar to that for infant mortality. Stillbirths to nonresident mothers were excluded because of the possible effect of other conditions; likewise stillbirths to mothers who moved away prior to the visit of the agent. In the latter cases the information would have been difficult to obtain, and there was the same chance of omission of births as in calculating the infant mortality rate.

With reference to the accuracy of the data the registration of stillbirths has a peculiar margin of error of its own. Usually a stillbirth must be registered both as a death and as a birth; in some States the law is not clear whether stillbirths have to be registered at all, and in others miscarriages as well as stillbirths must be registered. It sometimes happens that a stillbirth is registered as a "death" but not as a "birth" where registration of both is required by law. It is obvious that such an omission is one of carelessness only, as ordinarily the same person, usually a physician, would register both.

The number of unregistered stillbirths would be difficult to determine. It would be much more difficult to find cases of omission of stillbirths by canvass or other inquiry than to find cases of omission of registration of live births. Omissions might be due to ignorance of the law or failure to observe it. Doctors are probably more conversant with the law than midwives. There is chance for confusion between stillbirths and infant deaths on the one hand, where it is difficult to determine whether or not the child was born alive; and between stillbirths and miscarriages on the other, where it is difficult to state accurately the number of months of gestation. If the law requires the reporting of miscarriages, the number of stillbirths is probably more complete than where they are not reported.

In the stillbirth rates presented in the infant mortality reports of the Children's Bureau, the stillbirths to resident married mothers that were registered either as births or deaths have been compared to the registered births to resident married mothers for Manchester, Brockton, and New Bedford; in other cities the figure for stillbirths is compared to the total registered and known unregistered births to resident married mothers.

TABLE IV.—*Stillbirths and miscarriages in New Bedford included in and excluded from detailed analysis, by reason for exclusion.*

Inclusions or exclusions and reasons for exclusion.	Number.
Total known stillbirths and miscarriages	143
Total, stillbirths included	75
Total, stillbirths and miscarriages excluded	68
Reasons for exclusion:	
Nonresidence or lack of information: Total	38
Not found	21
Data incomplete or unreliable	
Nonresident	3
Removed	14
Miscarriages	24
Stillbirths on account of illegitimacy	5
Nonregistration of birth	1

Stillbirths excluded.

There were 143 known stillbirths and miscarriages in New Bedford. Of these 24 were excluded because they were miscarriages of less than seven months' gestation. Thirty-eight more were excluded because the mothers had moved out of the city or were nonresident or because information was lacking. In these cases it could not always be determined definitely whether the birth was a stillbirth or a miscarriage. There were 81 stillbirths to mothers resident in the city both at the time of the birth of the child and at the agent's visit. Five of these were excluded on account of illegitimacy and one on account of nonregistration of the birth. The rate for the included group is formed by dividing 75 stillbirths by the 2,662 registered births included in the study giving a rate of 2.8 per cent. No rate can be formed for the nonresident, not found, or removed groups, because it can not be determined from the records whether or not the birth was a stillbirth or a miscarriage.

GENERAL TABLES.

GENERAL TABLES.

TABLE 1.—*Births during selected year in each precinct of residence, according to nationality of mother.*[a]

Nationality of mother.	Births during selected year.																		
	Total.	Precinct of residence.																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
All mothers	2,662	478	300	197	71	108	81	49	22	60	34	47	55	234	49	66	248	318	245
Native mothers	753	106	71	28	23	49	47	18	17	46	16	28	35	27	33	35	63	50	61
Foreign-born mothers	1,909	372	229	169	48	59	34	31	5	14	18	19	20	207	16	31	185	268	184
Portuguese white	685	86	66	18	4	6	10	4	1	3	6	5	5	113	6	14	13	175	150
Portuguese Negro	76	1	1	...	...	...	...	2	...	3	7	1	...	59	...	...	2	...	...
French Canadian	415	169	84	32	12	8	8	2	...	1	1	2	...	...	1	...	64	24	7
Canadian (except French)	27	2	1	2	1	2	1	1	...	1	1	1	1	2	1	2	2	1	5
English	226	48	12	9	6	28	10	...	1	2	...	2	...	4	2	9	63	19	11
Polish	223	30	42	98	...	...	1	...	...	...	...	1	...	...	...	...	22	27	2
Irish, Scotch, and Welsh [b]	70	6	2	2	3	12	3	1	2	1	1	1	10	4	...	6	6	4	6
Jewish	60	3	4	2	3	2	1	2	...	1	2	...	1	21	5	...	2	10	1
All other [c]	126	27	16	6	19	1	...	19	1	2	...	6	3	4	1	...	11	8	2
Not reported	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

[a] Wards and precincts according to ward and precinct lines existing at the time of the study.
[b] Including 60 Irish, 8 Scotch, and 2 Welsh.
[c] Including 40 Italian, 16 German, 15 French, 15 Greek, 13 Syrian, 7 Bohemian and Moravian, 4 Swedish, 4 foreign black, 3 Russian, 2 Lithuanian, 2 Magyar, 1 Armenian, 1 Flemish, 1 Norwegian, 2 all other.

TABLE 2.—*Births during selected year to foreign-born mothers, infant deaths, infant mortality rate, and per cent of stillbirths, according to years of residence of mother in the United States and nationality.*

Years in United States and nationality.	Total births.	Live births.	Infant deaths.	Infant mortality rate.[a]	Stillbirths.	
					Number.	Per cent of total births.[a]
All foreign-born mothers	1,909	1,858	258	138.9	51	2.7
Under 3 years	189	185	38	205.4	4	2.1
3 to 5 years	313	305	57	186.9	8	2.6
6 to 8 years	343	338	50	147.9	5	1.5
9 to 11 years	264	253	37	146.2	11	4.2
12 to 15 years	275	266	22	82.7	9	3.3
16 years and over	511	497	50	100.6	14	2.7
Not reported	14	14	4	....	....	....
Portuguese-white mothers	685	667	134	200.9	18	2.6
Under 3 years	101	99	28	....	2	2.0
3 to 5 years	124	122	33	270.5	2	1.6
6 to 8 years	145	142	32	225.4	3	2.1
9 to 11 years	121	116	21	181.0	5	4.1
12 to 15 years	106	105	10	95.2	1	0.9
16 years and over	85	80	9	....	5	....
Not reported	3	3	1	....	....	....
Other foreign-born mothers	1,224	1,191	124	104.1	33	2.7
Under 3 years	88	86	10	....	2	....
3 to 5 years	189	183	24	131.1	6	3.2
6 to 8 years	198	196	18	91.8	2	1.0
9 to 11 years	143	137	16	116.8	6	4.2
12 to 15 years	169	161	12	74.5	8	4.7
16 years and over	426	417	41	98.3	9	2.1
Not reported	11	11	3	....	....	....

[a] Not shown where base is less than 100.

TABLE 3.—*Number and per cent distribution of deaths among infants born in selected year to mothers of specified nationality, by cause of death.*

Cause of death.	All mothers.			Native mothers.			Foreign-born mothers.		
	Total deaths.	Infant mortality rate.	Per cent distribution.	Deaths.	Infant mortality rate.	Per cent distribution.	Deaths.	Infant mortality rate.	Per cent distribution.
All causes	337	130.3	100.0	79	108.4	100.0	258	138.9	100.0
Gastric and intestinal diseases	125	48.3	37.1	23	31.6	29.1	102	54.9	39.5
Respiratory diseases	72	27.8	21.4	13	17.8	16.5	59	31.8	22.9
Malformations	12	4.6	3.6	5	6.9	6.3	7	3.8	2.7
Early infancy	75	29.0	22.3	24	32.9	30.4	51	27.4	19.8
Premature birth	25	9.7	7.4	7	9.6	8.9	18	9.7	7.0
Congenital debility	40	15.5	11.9	14	19.2	17.7	26	14.0	10.1
Injuries at birth	10	3.9	3.0	3	4.1	3.8	7	3.8	2.7
Epidemic diseases	23	8.9	6.8	3	4.1	3.8	20	10.8	7.8
Diseases ill defined or unknown	7	2.7	2.1	4	5.5	5.1	3	1.6	1.2
All other causes	23	8.9	6.8	7	9.6	8.9	16	8.6	6.2
	Portuguese white.			French Canadian.			All other foreign born.		
All causes	134	200.9	100.0	47	115.5	100.0	77	98.2	100.0
Gastric and intestinal diseases	68	101.9	50.7	12	29.5	25.5	22	28.1	28.6
Respiratory diseases	34	51.0	25.4	7	17.2	14.9	18	23.0	23.4
Malformations	1	1.5	0.7	3	7.4	6.4	3	3.8	3.9
Early infancy	14	21.0	10.4	17	41.8	36.2	20	25.5	26.0
Premature birth	1	1.5	0.7	10	24.6	21.3	7	8.9	9.1
Congenital debility	9	13.5	6.7	6	14.7	12.8	11	14.0	14.3
Injuries at birth	4	6.0	3.0	1	2.5	2.1	2	2.6	2.6
Epidemic diseases	10	15.0	7.5	3	7.4	6.4	7	8.9	9.1
Diseases ill defined or unknown	1	1.5	0.7	1	2.5	2.1	1	1.3	1.3
All other causes	6	9.0	4.5	4	9.8	8.5	6	7.7	7.8

TABLE 4.—*Number and per cent distribution of deaths of infants born in New Bedford in selected year and of infant deaths in the registration area in 1914, by cause of death.*

Abridged International List.[a]	Detailed International List.[a]	Cause of death.[b]	Infant deaths in— New Bedford. Number.	Infant deaths in— New Bedford. Per cent distribution.	Infant deaths in— Registration area. Number.	Infant deaths in— Registration area. Per cent distribution.
		All causes	337	100.0	155,075	100.0
		Gastric and intestinal diseases [c]	125	37.1	37,736	24.3
24	102, 103	Diseases of the stomach	1	0.3	2,556	1.6
25	104	Diarrhea and enteritis	124	36.8	35,180	22.7
		Respiratory diseases [d]	72	21.4	24,036	15.5
20	89	Acute bronchitis	12	3.6	3,458	2.2
Part of 23	91	Broncho-pneumonia	46	13.6	13,653	8.8
22	92	Pneumonia	14	4.2	6,925	4.5
Part of 33	150	Malformations	12	3.6	9,663	6.2
		Early infancy	75	22.3	52,535	33.9
Part of 33	151(1)	Premature birth	25	7.4	28,270	18.2
Part of 33; part of 37	151(2), 152(2), 153	Congenital debility	40	11.9	18,549	12.0
Part of 37	152(1)	Injuries at birth	10	3.0	5,716	3.7
		Epidemic diseases [e]	23	6.8	12,714	8.2
5	6	Measles	......	......	1,041	0.7
6	7	Scarlet fever	......	......	204	0.1
7	8	Whooping cough	10	3.0	3,899	2.5
8	9	Diphtheria and croup	2	0.6	977	0.6
9	10	Influenza	......	......	481	0.3
Part of 12	14	Dysentery	1	0.3	573	0.4
Part of 12	18	Erysipelas	3	0.9	740	0.5
Part of 37	24	Tetanus	......	......	368	0.2
13	28, 29	Tuberculosis of the lungs	2	0.6	883	0.6
14	30	Tuberculosis meningitis	4	1.2	1,118	0.7
15	31, 32, 33, 34, 35	Other forms of tuberculosis	......	......	448	0.3
Part of 37	37	Syphilis	1	0.3	1,982	1.3
35	155 to 186	External causes	......	......	1,926	1.2
38	187, 188, 189	Diseases ill defined or unknown	7	2.1	2,964	1.9
		All other causes	23	6.8	13,501	8.7
17	61	Meningitis	2	0.6	1,659	1.1
Part of 37	71	Convulsions	3	0.9	2,950	1.9
19	79	Organic diseases of the heart	......	......	596	0.4
		Other	18	5.3	8,296	5.3

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[a] The numbers indicate the classification in the abridged and detailed lists, respectively, of the Manual of the International List of Causes of Death.

[b] The causes of death included in this list are those used by the U. S. Bureau of the Census (see Mortality Statistics, 1914, p. 660), in classifying the deaths of infants under 1 year. They are those causes of death or groups of causes which are most important at this age. The numbers of the detailed and abridged international lists will facilitate their identification. In order to make discussion of the figures easier, these causes of death have been grouped in eight main groups.

[c] The term gastric and intestinal diseases, as used in the tables and discussion, includes, as above shown, only the diseases of this type which are most important among infants, i. e., diseases of the stomach, diarrhea and enteritis. It does not include all "diseases of the digestive system" as classified under this heading according to the detailed International List.

[d] Respiratory diseases, as used in the tables and discussion, similarly, includes only those of the respiratory diseases which are most important among infants, i. e., acute bronchitis, broncho-pneumonia and pneumonia. It does not include all "diseases of the respiratory system" as classified under this heading according to the detailed International List.

[e] Epidemic diseases, as used in the tables and discussion, includes only those of this group which are most important among infants.

TABLE 5.—*Deaths of infants born during selected year occurring in specified month, by cause of death.*

Cause of death.	Total deaths.	Month of death.											
		Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
All causes	337	22	29	31	26	14	12	49	42	34	34	22	22
Gastric and intestinal diseases	125	4	3	6	.....	3	2	33	35	17	15	3	4
Respiratory diseases	72	5	11	6	12	6	2	3	.....	4	5	10	8
Malformations	12	3	1	1	1	.....	1	1	.....	1	2	1	.....
Early infancy	75	4	6	9	9	3	4	7	6	7	9	5	6
Premature birth	25	.....	1	3	4	1	2	4	2	2	2	2	2
Congenital debility	40	2	4	5	5	2	2	3	4	4	6	2	1
Injuries at birth	10	2	1	1	.....	.....	.....	.....	.....	1	1	1	3
Epidemic diseases	23	1	5	5	1	2	1	3	1	2	2	.....	.....
Diseases ill defined or unknown	7	1	1	1	.....	.....	1	1	.....	.....	.....	1	1
All other causes	23	4	2	3	3	.....	1	1	....	3	1	2	3

TABLE 6.—*Deaths among infants born during selected year occurring in specified month of life, by cause of death.*

Cause of death.	Total deaths.	Deaths in specified month of life.													
		First.			Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Eighth.	Ninth.	Tenth.	Eleventh.	Twelfth.
		Total.	Under 2 weeks.	2 weeks, but under 1 month.											
All causes	337	102	84	18	32	24	34	25	20	33	15	15	19	9	9
Gastric and intestinal diseases	125	11	4	7	16	14	17	14	11	16	8	6	5	6	1
Respiratory diseases	72	4	2	2	7	5	11	6	5	9	5	5	6	3	6
Malformations	12	12	11	1	....	....	....	....	....	....	....	....	....	....	....
Early infancy	75	68	63	5	2	....	3	1	....	....	....	....	....	....	1
Premature birth	25	25	24	1	....	....	....	....	....	....	....	....	....	....	....
Congenital debility	40	33	29	4	2	....	3	1	....	....	....	....	....	....	1
Injuries at birth	10	10	10	....	....	....	....	....	....	....	....	....	....	....	....
Epidemic diseases	23	3	1	2	2	....	1	1	1	5	1	4	5	....	....
Diseases ill defined or unknown	7	1	1	....	1	2	....	....	....	1	....	....	2	....	....
All other causes	23	3	2	1	4	3	2	3	3	2	1	....	1	....	1

TABLE 7.—*Deaths among infants born during selected year in each precinct of residence, by cause of death.*

Cause of death.	Total deaths.	Precinct of residence.																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
All causes	337	65	52	24	2	10	7	6	3	5	5	7	3	38	2	6	21	54	27
Gastric and intestinal diseases	125	22	26	7	...	3	2	1	...	...	1	1	2	12	...	1	8	28	11
Respiratory diseases	72	13	13	5	1	...	...	2	1	2	1	2	...	11	...	1	...	12	8
Malformations	12	2	1	2	...	...	...	...	...	1	...	1	1	...	...	...	1	2	1
Early infancy	75	18	4	6	1	5	3	2	1	1	3	3	...	7	1	3	6	8	3
Premature birth	25	7	2	3	...	2	2	2	1	1	...	...	...	...	...	1	1	3	...
Congenital debility	40	7	2	2	1	2	...	...	...	...	3	2	...	7	1	1	4	5	3
Injuries at birth	10	4	...	1	...	1	1	...	...	...	...	1	...	...	...	1	1	...	...
Epidemic diseases	23	3	4	3	...	1	...	...	1	...	...	...	...	5	...	1	1	2	2
Diseases ill defined or unknown	7	...	1	...	...	1	...	...	...	...	...	...	...	...	1	...	3	1	...
All other causes	23	7	3	1	...	...	2	1	...	1	...	...	...	3	...	...	2	1	2

TABLE 8.—*Number and per cent distribution of deaths of infants born during selected year to mothers of specified nativity, by age at death.*

Age at death.	All mothers.		Native mothers.		Foreign-born mothers.	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
All ages	337	100.0	79	100.0	258	100.0
Less than 1 month	102	30.3	29	36.7	73	28.3
Less than 1 day	41	12.2	12	15.2	29	11.2
1 day but less than 2	9	2.7	3	3.8	6	2.3
2 days but less than 3	4	1.2	....	....	4	1.6
3 days but less than 7	15	4.5	7	8.9	8	3.1
1 week but less than 2	15	4.5	2	2.5	13	5.0
2 weeks but less than 1 month	18	5.3	5	6.3	13	5.0
1 month but less than 2	32	9.5	9	11.4	23	8.9
2 months but less than 3	24	7.1	5	6.3	19	7.4
3 months but less than 6	79	23.4	19	24.1	60	23.3
6 months but less than 9	63	18.7	9	11.4	54	20.9
9 months but less than 12	37	11.0	8	10.1	29	11.2

TABLE 9.—*Births from all pregnancies, infant deaths, infant mortality rate, and per cent of stillbirths, according to order of birth and age of mother.*

Order of birth and age of mother.	Total births.	Live births.	Infant deaths.	Infant mortality rate.[a]	Stillbirths.	
					Number.	Per cent of total births.[a]
All pregnancies	9,340	9,073	1,463	161.2	267	2.9
Under 20	755	735	171	232.7	20	2.6
20 to 24	3,234	3,158	530	167.8	76	2.4
25 to 29	2,949	2,868	404	140.9	81	2.7
30 to 34	1,555	1,502	214	142.6	53	3.4
35 to 39	667	638	109	170.8	29	4.3
40 and over	174	166	31	186.7	8	4.6
Not reported	6	6	4	....	....	....
First pregnancy	2,625	2,531	404	159.6	94	3.6
Under 20	552	539	122	226.3	13	2.4
20 to 24	1,379	1,337	206	154.1	42	3.0
25 to 29	556	529	61	115.3	27	4.9
30 to 34	111	102	11	107.8	9	8.1
35 to 39	23	20	3	....	3	....
40 and over	4	4	1	....	....	....
Second pregnancy	1,981	1,928	285	147.8	53	2.7
Under 20	162	156	36	230.8	6	3.7
20 to 24	982	961	152	158.2	21	2.1
25 to 29	641	622	79	127.0	19	3.0
30 to 34	160	155	14	90.3	5	3.1
35 to 39	34	32	4	....	2	....
40 and over	2	2	....	....	....	....
Third pregnancy	1,451	1,421	202	142.2	30	2.1
Under 20	38	37	11	....	1	....
20 to 24	520	510	91	178.4	10	1.9
25 to 29	626	612	76	124.2	14	2.2
30 to 34	216	212	22	103.8	4	1.9
35 to 39	46	45	2	....	1	....
40 and over	4	4	....	....	....	....
Not reported	1	1	....	....	....	....

[a] Not shown where base is less than 100.

TABLE 9.—*Births from all pregnancies, infant deaths, infant mortality rate, and per cent of stillbirths, according to order of birth and age of mother*—Continued.

Order of birth and age of mother.	Total births.	Live births.	Infant births.	Infant mortality rate.	Stillbirths.	
					Number.	Per cent of total births.
Fourth pregnancy	1,038	1,023	158	154.4	15	1.4
Under 20	2	2	1	....	....	....
20 to 24	238	236	50	211.9	2	0.8
25 to 29	480	472	75	158.9	8	1.7
30 to 34	255	252	24	95.2	3	1.2
35 to 39	54	53	7	....	1	....
40 and over	7	6	....	....	1	....
Not reported	2	2	1	....	....	....
Fifth pregnancy	710	693	104	150.1	17	2.4
Under 20	1	1	1	....	....	....
20 to 24	87	86	21	....	1	....
25 to 29	307	302	44	145.7	5	1.6
30 to 34	233	225	29	128.9	8	3.4
35 to 39	66	64	7	....	2	....
40 and over	14	13	....	....	1	....
Not reported	2	2	2	....	....	....
Sixth pregnancy	491	473	77	162.8	18	3.7
20 to 24	18	18	6	....	....	....
25 to 29	184	179	30	167.6	5	2.7
30 to 34	200	190	26	136.8	10	5.0
35 to 39	76	74	12	....	2	....
40 and over	12	11	2	....	1	....
Not reported	1	1	1	....	....	....
Seventh pregnancy	354	339	74	218.3	15	4.2
20 to 24	7	7	4	....	....	....
25 to 29	94	93	26	....	1	....
30 to 34	152	143	27	188.8	9	5.9
35 to 39	93	89	15	....	4	....
40 and over	8	7	2	....	1	....
Eighth pregnancy	246	236	64	271.2	10	4.1
20 to 24	2	2	....	....	....	....
25 to 29	37	35	6	....	2	....
30 to 34	112	108	33	305.6	4	3.6
35 to 39	77	74	21	....	3	....
40 and over	18	17	4	....	1	....
Ninth pregnancy	166	165	36	218.2	1	0.6
20 to 24	1	1	....	....	....	....
25 to 29	17	17	5	....	....	....
30 to 34	65	65	14	....	....	....
35 to 39	63	63	15	....	....	....
40 and over	20	19	2	....	1	....
Tenth pregnancy	110	105	19	181.0	5	4.5
25 to 29	4	4	....	....	....	....
30 to 34	27	27	7	....	....	....
35 to 39	56	52	8	....	4	....
40 and over	23	22	4	....	1	....

TABLE 10.—*Mothers reporting specified number of stillbirths, according to the number of births to mother.*

Number of births to mother.	Total mothers.	Mothers reporting specified number of stillbirths.				
		None.	1	2	3	5
All mothers	2,604	2,388	176	31	8	1
1	632	608	24	...	...	...
2	524	500	23	1	...	...
3	406	375	25	6	...	...
4	329	303	24	2	...	...
5	215	193	16	5	1	...
6	141	125	12	3	1	...
7	108	94	10	3	1	...
8	78	61	15	2	...	...
9	62	49	7	3	3	...
10	37	29	6	...	2	...
11	25	15	8	2	...	...
12	18	13	4	1	...	...
13	13	10	...	3	...	...
14	6	6	...	...	...	...
15	8	6	1	...	...	1
16	1	1	...	...	...	...
17	1	...	1	...	...	...

TABLE 11.—*Mothers reporting specified number of infant deaths, by number of live births to mother.*

Live births to mother.	Total mothers.	Mothers reporting specified number of infant deaths.								
		None.	1	2	3	4	5	6	7	9
All mothers	2,579	1,656	597	209	65	28	10	9	4	1
1	637	1,555	82	...	...	...	...	...	...	...
2	528	422	96	10	...	...	...	...	...	...
3	405	270	108	24	3	...	...	...	...	...
4	323	184	96	35	6	2	...	...	...	...
5	208	94	70	32	9	3	...	...	...	...
6	140	51	53	23	10	2	...	1	...	...
7	114	42	35	25	8	4	...	...	...	...
8	68	19	18	22	5	4	...	...	...	...
9	57	7	16	14	6	5	4	3	2	...
10	39	6	9	13	8	...	2	...	1	...
11	22	3	5	8	2	3	1	...	...	...
12	13	1	1	3	2	3	2	...	1	...
13	10	...	4	...	3	1	...	2	...	...
14	7	1	3	...	1	...	...	2	...	...
15	6	...	...	...	2	1	1	1	...	1
16	2	1	1	...	...	...	...	...	...	...

TABLE 12.—*Total births and number and per cent of plural births resulting from all pregnancies, according to age of mother.*

Age of mother.	Total births.	Plural births.	
		Number.	Per cent.[a]
All ages	9,340	152	1.6
Under 20	755	4	.5
20 to 24	3,234	42	1.3
25 to 29	2,949	51	1.7
30 to 34	1,555	30	1.9
35 to 39	667	14	2.1
40 and over	174	11	6.3
Not reported	6	...	...

[a] Not shown where base is less than 100.

TABLE 13.—*Births during selected year and number and per cent of births to mothers with specified kind of attendant, according to nationality of mother.*

Nationality of mother.	Total births.	Attendant at birth.					
		Physician.		Midwife.		Other, none, or not reported.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
All mothers	2,662	1,934	72.7	615	23.1	113	4.2
Native mothers	753	698	92.7	42	5.6	13	1.7
Foreign-born mothers	1,909	1,236	64.7	573	30.0	100	5.2
Portuguese white	685	210	30.7	389	56.8	86	12.6
Portuguese Negro	76	33	43.4	40	52.6	3	3.9
French Canadian	415	412	99.3	2	.5	1	.2
Canadian (except French)	27	26	96.3			1	3.7
Polish	223	121	54.3	102	45.7		
English	226	196	86.7	26	11.5	4	1.8
Jewish	60	59	98.3	1	1.7		
Irish, Scotch, and Welsh[a]	70	68	97.1	2	2.9		
All other	126	111	88.1	11	8.7	4	3.2
Not reported	1					1	100.0

[a] Including 60 Irish, 8 Scotch, and 2 Welsh.

TABLE 14.—*Births in selected year, infant deaths, infant mortality rate, and per cent of stillbirths, according to attendant at birth and nativity of mother.*

Attendant at birth and nativity of mother.	Total births.	Live births.	Infant deaths.	Infant mortality rate.[a]	Stillbirths.	
					Number.	Per cent of total births.
All mothers	2,662	2,587	337	130.3	75	2.8
Physician	1,934	1,870	216	115.5	64	3.3
Midwife	615	609	103	169.1	6	1.0
Other, none, or not reported	113	108	18	166.7	5	4.4
Native mothers	753	729	79	108.4	24	3.2
Physician	698	677	71	104.9	21	3.0
Midwife	42	42	6			
Other, none, or not reported	13	10	2		3	
Foreign-born mothers	1,909	1,858	258	138.9	51	2.7
Physician	1,236	1,193	145	121.5	43	3.5
Midwife	573	567	97	171.1	6	1.0
Other, none, or not reported	100	98	16	163.3	2	2.0

[a] Not shown where base is less than 100.

TABLE 15.—*Number and per cent distribution, by type of feeding, of infants born during selected year and surviving at end of third, sixth, and ninth months, according to nationality of mother.*

Type of feeding and nationality of mother.	Infants surviving at end of—					
	Third month.		Sixth month.		Ninth month.	
	Number.[a]	Per cent distribution.	Number.[a]	Per cent distribution.	Number.[a]	Per cent distribution.
All mothers	2,429	100.0	2,350	100.0	2,287	100.0
Breast exclusively	1,602	66.0	1,054	44.9	594	26.0
Mixed	226	9.3	422	18.0	623	27.2
Artificial exclusively	600	24.7	873	37.1	1,069	46.7
Not reported	1	(a)	1	(a)	1	(a)
Native mothers	686	100.0	667	100.0	658	100.0
Breast exclusively	427	62.2	297	44.5	163	24.8
Mixed	40	5.8	85	12.7	143	21.7
Artificial exclusively	219	31.9	285	42.7	352	53.5
Foreign-born mothers	1,743	100.0	1,683	100.0	1,629	100.0
Breast exclusively	1,175	67.4	757	45.0	431	26.5
Mixed	186	10.7	337	20.0	480	29.5
Artificial exclusively	381	21.9	588	34.9	717	44.0
Not reported	1	0.1	1	0.1	1	0.1
Portuguese-white mothers	619	100.0	583	100.0	549	100.0
Breast exclusively	372	60.1	232	39.8	146	26.6
Mixed	100	16.2	131	22.5	149	27.1
Artificial exclusively	147	23.7	220	37.7	254	46.3
Other foreign-born mothers	1,124	100.0	1,100	100.0	1,080	100.0
Breast exclusively	803	71.4	525	47.7	285	26.4
Mixed	86	7.7	206	18.7	331	30.6
Artificial exclusively	234	20.8	368	33.5	463	42.9
Not reported	1	0.1	1	0.1	1	0.1

[a] Excluding one infant with foreign-born mother for whom feeding was not reported.

Table 16.—*Infants born during selected year to mothers of specified nativity and surviving at beginning of the month, number and per cent of infants dying subsequently in first year, and infant deaths in specified month of life, according to month of life and type of feeding in the month.*

Month of life and type of feeding.	Total infant survivors.	Subsequent infant deaths in—			Native mothers.				Foreign-born mothers.			
		First year.		Specified month.	Infant survivors.	Subsequent infant deaths in—			Infant survivors.	Subsequent infant deaths in—		
						First year.		Specified month.		First year.		Specified month.
		Number.	Per cent.[a]			Number.	Per cent.[a]			Number.	Per cent.[a]	
First month....	2,587	337	13.0	102	729	79	10.8	29	1,858	258	13.9	73
Breast exclusively...	2,106	186	8.8	24	569	38	6.7	8	1,537	148	9.6	16
Mixed..........	98	15	......	2	18	2	......	1	80	13	......	1
Artificial exclusively.	322	76	23.6	16	125	22	17.6	3	197	54	27.4	13
Not fed, died at once.	60	60	......	60	17	17	......	17	43	43	......	43
Not reported.........	1	......	......	......	......	......	......	......	1	......	......	......
Second month.	2,485	235	9.5	32	700	50	7.1	9	1,785	185	10.4	23
Breast exclusively...	1,846	110	6.0	13	491	19	3.9	4	1,355	91	6.7	9
Mixed..........	157	27	17.2	5	29	5	......	1	128	22	17.2	4
Artificial exclusively.	481	98	20.4	14	180	26	14.4	4	301	72	23.9	10
Not reported.........	1	......	......	......	......	......	......	......	1	......	......	......
Third month...	2,453	203	8.3	24	691	41	5.9	5	1,762	162	9.2	19
Breast exclusively...	1,609	73	4.5	7	429	10	2.3	2	1,180	63	5.3	5
Mixed..........	227	24	10.6	1	40	3	......	......	187	21	11.2	1
Artificial exclusively.	616	106	17.2	16	222	28	12.6	3	394	78	19.8	13
Not reported.........	1	......	......	......	......	......	......	......	1	......	......	......
Fourth month.	2,429	179	7.4	34	686	36	5.2	9	1,743	143	8.2	25
Breast exclusively...	1,362	45	3.3	8	365	6	1.6	......	997	39	3.9	8
Mixed..........	311	27	8.7	6	59	3	......	......	252	24	9.5	6
Artificial exclusively.	755	107	14.2	20	262	27	10.3	9	493	80	16.2	11
Not reported.........	1	......	......	......	......	......	......	......	1	......	......	......
Fifth month...	2,395	145	6.1	25	677	27	4.0	5	1,718	118	6.9	20
Breast exclusively...	1,214	30	2.5	4	332	4	1.2	......	882	26	2.9	4
Mixed..........	352	19	5.4	1	68	2	......	......	284	17	6.0	1
Artificial exclusively.	828	96	11.6	20	277	21	7.6	5	551	75	13.6	15
Not reported.........	1	......	......	......	......	......	......	......	1	......	......	......
Sixth month...	2,370	120	5.1	20	672	22	3.3	5	1,698	98	5.8	15
Breast exclusively...	1,056	22	2.1	2	298	3	1.0	1	758	19	2.5	1
Mixed..........	426	17	4.0	4	85	2	......	......	341	15	4.4	4
Artificial exclusively.	887	81	9.1	14	289	17	5.9	4	598	64	10.7	10
Not reported.........	1	......	......	......	......	......	......	......	1	......	......	......
Seventh month	2,350	100	4.3	33	667	17	2.5	7	1,683	83	4.9	26
Breast exclusively...	833	14	1.7	1	239	1	0.4	......	594	13	2.2	1
Mixed..........	548	18	3.3	9	115	3	2.6	2	433	15	3.5	7
Artificial exclusively.	968	68	7.0	23	313	13	4.2	5	655	55	8.4	18
Not reported.........	1	......	......	......	......	......	......	......	1	......	......	......
Eighth month..	2,317	67	2.9	15	660	10	1.5	2	1,657	57	3.4	13
Breast exclusively...	719	10	1.4	3	198	1	0.5	1	521	9	1.7	2
Mixed..........	589	12	2.0	2	133	1	0.8	......	456	11	2.4	2
Artificial exclusively.	1,008	45	4.5	10	329	8	2.4	1	679	37	5.4	9
Not reported.........	1	......	......	......	......	......	......	......	1	......	......	......
Ninth month...	2,302	52	2.3	15	658	8	1.2	......	1,644	44	2.7	15
Breast exclusively...	596	6	1.0	2	163	......	......	......	433	6	1.4	2
Mixed..........	625	11	1.8	2	143	1	0.7	......	482	10	2.1	2
Artificial exclusively.	1,080	35	3.2	11	352	7	2.0	......	728	28	3.8	11
Not reported.........	1	......	......	......	......	......	......	......	1	......	......	......

[a] Not shown where base is less than 100.

TABLE 17.—*Infants born during selected year and surviving at end of 3, 6, and 9 months of age, whose mothers had specified working status, and number and per cent artificially fed, according to nationality of mother.*

Type of feeding at specified age and nationality of mother.	Total infant survivors.	Mother not gainfully employed before specified time.	Mother gainfully employed before specified time—		Mother gainfully employed, but time of resumption not reported.
			At home.	Away from home.	At home.
ALL MOTHERS.					
Infants living at end of 3 months	2,429	1,873	384	157	15
Number artificially fed	600	456	69	72	3
Per cent artificially fed	24.7	24.3	18.0	45.9	20.0
Infants living at end of 6 months	2,350	1,629	406	302	13
Number artificially fed	873	544	118	207	4
Per cent artificially fed	37.1	33.4	29.1	68.5	30.8
Infants living at end of 9 months	2,287	1,469	413	392	13
Number artificially fed	1,069	613	161	289	6
Per cent artificially fed	46.7	41.7	39.0	73.7	46.2
NATIVE MOTHERS.					
Infants living at end of 3 months	686	598	57	27	4
Number artificially fed	219	184	19	15	1
Per cent artificially fed	31.9	30.8	33.3	55.6	25.0
Infants living at end of 6 months	667	538	68	58	3
Number artificially fed	285	213	30	42	...
Per cent artificially fed	42.7	39.6	44.1	72.4	...
Infants living at end of 9 months	658	511	72	72	3
Number artificially fed	352	252	41	58	1
Per cent artificially fed	53.5	49.3	56.9	80.6	33.3
FOREIGN-BORN MOTHERS.					
Infants living at end of 3 months	1,743	1,275	327	130	11
Number artificially fed	381	272	50	57	2
Per cent artificially fed	21.9	21.3	15.3	43.8	18.2
Infants living at end of 6 months	1,683	1,091	338	244	10
Number artificially fed	588	331	88	165	4
Per cent artificially fed	34.9	30.3	26.0	67.6	40.0
Infants living at end of 9 months	1,629	958	341	320	10
Number artificially fed	717	361	120	231	5
Per cent artificially fed	44.0	37.7	35.2	72.2	50.0
Portuguese-white mothers.					
Infants living at end of 3 months	619	430	119	68	2
Number artificially fed	147	98	19	30	...
Per cent artificially fed	23.7	22.8	16.0	44.1	...
Infants living at end of 6 months	583	340	121	120	2
Number artificially fed	220	100	34	86	...
Per cent artificially fed	37.7	29.4	28.1	71.7	...
Infants living at end of 9 months	549	286	121	140	2
Number artificially fed	254	102	48	103	1
Per cent artificially fed	46.3	35.7	39.7	73.6	50.0
Other foreign-born mothers.					
Infants living at end of 3 months	1,124	845	208	62	9
Number artificially fed	234	174	31	27	2
Per cent artificially fed	20.8	20.6	14.9	43.5	22.2
Infants living at end of 6 months	1,100	751	217	124	8
Number artificially fed	368	231	54	79	4
Per cent artificially fed	33.5	30.8	24.9	63.7	50.0
Infants living at end of 9 months	1,080	672	220	180	8
Number artificially fed	463	259	72	128	4
Per cent artificially fed	42.9	38.5	32.7	71.1	50.0

TABLE 18.—*Births during selected year in each father's earnings group, according to occupation of father.*

Occupation of father.	Total births.	Earnings of father.								
		Under $450.	$450 to $549.	$550 to $649.	$650 to $849.	$850 to $1,049.	$1,050 to $1,249.	$1,250 and over.	No earnings.	Not reported.
All occupations	2,662	551	453	387	625	308	85	173	36	44
Manufacturing and mechanical industries	1,730	424	321	257	425	188	44	61	......	10
Bakers	17	......	4	......	10	2	......	1	......	......
Blacksmiths	12	2	......	......	3	4	2	1	......	......
Builders and contractors	25	1	2	......	4	8	1	9	......	......
Compositors and linotype operators	7	2	......	......	......	3	2	......	......	......
Electricians	12	......	......	1	2	6	2	1	......	......
Factory operatives and laborers	1,304	309	275	221	298	97	21	21	......	2
Cotton mills	1,091	329	230	190	249	66	11	14	......	2
Other textile mills	31	14	6	2	6	2	1	......	......	......
Metal and glass industries	95	16	19	13	23	15	5	4	......	......
Shoe industry	41	4	10	5	10	6	4	2	......	......
Other industries	46	6	10	11	10	8	......	1	......	......
Firemen and stationary engineers	54	2	8	3	18	15	4	3	......	1
Laborers, helpers and apprentices (not in factory)	41	24	10	2	3	2	......	......	......	......
Machinists, millwrights, and toolmakers	46	......	1	5	21	15	2	2	......	......
Manufacturers, proprietors, managers, and officials	27	......	2	......	7	3	1	13	......	1
Shoemakers and cobblers (not in factory)	9	2	1	2	3	......	......	1	......	......
Skilled mechanics, building trades	164	21	16	23	53	30	8	8	......	5
Tailors	7	1	1	......	1	2	1	1	......	......
Others in maunfacturing and mechanical industries	5	......	1	......	2	1	......	......	......	1
Trade	354	22	48	63	86	49	13	62	......	11
Bankers, brokers, real estate and insurance agents	20	......	1	......	5	3	3	7	......	1
Deliverymen	70	6	11	26	18	8	......	......	......	1
Laborers	29	9	12	7	1	......	......	......	......	......
Retail and wholesale dealers (proprietors, officials, and managers)	144	5	12	11	35	20	6	47	......	8
Salesmen and commercial travelers	85	2	11	17	26	18	3	7	......	1
Others in trade	6	......	1	2	1	......	1	1	......	......
Transportation	178	35	30	27	46	20	4	6	......	10
Chauffeurs, teamsters, expressmen	68	12	15	15	18	4	......	1	......	3
Conductors, motormen, locomotive engineers, and trainmen	36	2	2	3	12	10	1	3	......	3
Express, post, telegraph, and telephone employees	9	1	......	......	2	3	3	......	......	......
Laborers	31	3	10	8	8	1	......	......	......	1
Sailors, stevedores, and longshoremen	26	16	3	1	2	1	......	......	......	3
Others in transportation	8	1	......	......	4	1	......	2	......	......
Domestic and personal service	120	18	18	19	36	14	3	11	......	1
Barbers	33	3	2	4	18	4	......	2	......	......
Cooks and waiters	18	4	5	6	2	1	......	......	......	......
Janitors and elevator operators	24	6	4	3	6	2	2	1	......	......
Laborers	12	3	5	2	2	......	......	......	......	......
Servants	14	1	1	2	5	2	......	3	......	......
Others in domestic and personal service	19	1	1	2	3	5	1	5	......	1
Public service	83	13	16	8	16	15	12	2	......	1
Firemen and policemen	29	......	......	1	5	9	12	1	......	1
Laborers	43	10	14	7	10	2	......	......	......	......
Others in public service	11	3	2	......	1	4	......	1	......	......

TABLE 18.—*Births during selected year in each father's earnings group, according to occupation of father*—Continued.

Occupation of father.	Total births.	Earnings of father.								
		Under $450.	$450 to $549.	$550 to $649.	$650 to $849.	$850 to $1,049.	$1,050 to $1,249.	$1,250 and over.	No earnings.	Not reported.
Agriculture, fishing, and mining	73	36	14	5	4	6	1	1	......	6
Farmers and farm workers	24	10	5	2	3	3	......	......	......	1
Fishermen	43	25	7	3	1	2	......	......	......	5
Quarrymen	6	1	2	......	......	1	1	1	......	......
Clerical occupations (all industries)	55	3	6	6	11	13	6	9	......	
Professional and semiprofessional pursuits	33	......	......	2	1	3	2	21	......	4
No occupation and not reported [a]	36	......	......	......	......	......	......	......	36	......

[a] Including 1 case where the father lived on his income and 35 in which the father did not contribute to the support of the family (22 desertions, 6 deaths, 5 inability to work because of sickness, 1 a student, and in one instance the reason was not reported).

TABLE 19.—*Births during selected year in families of specified number of persons and average number of persons per family, according to earnings of father and nativity of mother.*

Earnings of father and nativity of mother.	Average number of persons per family.	Births during selected year in families of specified number of persons. [a]								No family. [b]
		All families, total births.	1	2	3	4	5 or 6	7 or 8	Over 8	
All mothers	3.8	2,662	16	760	634	486	482	201	79	4
Under $450	3.9	551	2	148	134	106	100	45	15	1
$450 to $549	3.8	453	1	136	108	84	82	34	8	......
$550 to $649	3.7	387	2	128	79	67	78	27	6	......
$650 to $849	4.0	625	......	165	153	114	121	43	28	1
$850 to $1,049	4.0	308	......	81	81	56	51	25	14	......
$1,050 to $1,249	3.7	85	......	29	20	13	14	8	1	......
$1,250 and over	3.7	173	2	56	41	32	24	13	5	......
No earnings	2.6	36	9	11	7	3	3	2	......	1
Not reported	4.2	44	......	6	11	11	9	4	2	1
Native mothers	3.4	753	13	271	193	128	106	27	14	1
Under $450	3.5	60	2	20	14	11	6	4	2	1
$450 to $549	3.2	67	1	28	16	12	8	1	1	......
$550 to $649	3.3	107	1	44	23	17	17	5	......	......
$650 to $849	3.5	194	......	71	49	34	30	6	4	......
$850 to $1,049	3.5	146	......	45	46	22	25	4	4	......
$1,050 to $1,249	3.5	44	......	17	12	6	7	1	1	......
$1,250 and over	3.3	102	2	38	25	20	11	4	2	......
No earnings	2.4	17	7	4	3	1	1	1	......	......
Not reported	3.5	16	......	4	5	5	1	1	......	......
Foreign-born mothers	4.0	1,909	3	489	441	358	376	174	65	3
Under $450	3.9	491	......	128	120	95	94	41	13	......
$450 to $549	3.9	386	......	108	92	72	74	33	7	......
$550 to $649	3.9	280	1	84	56	50	61	22	6	......
$650 to $849	4.3	431	......	94	104	80	91	37	24	1
$850 to $1,049	4.4	162	......	36	35	34	26	21	10	......
$1,050 to $1,249	4.0	41	......	12	8	7	7	7	......	......
$1,250 and over	4.1	71	......	18	16	12	13	9	3	......
No earnings	2.8	19	2	7	4	2	2	1	......	1
Not reported	4.6	28	......	2	6	6	8	3	2	1

[a] Excluding infant born during selected year.

[b] Infants boarded out.

TABLE 20.—*Number and per cent distribution of live births in selected year to mothers of specified nativity in and outside "unfavorable" area, according to earnings of father.*

Earnings of father.	Live births to mothers who lived—			
	In "unfavorable" area.		Outside "unfavorable" area.	
	Number.	Per cent distribution.	Number.	Per cent distribution.
All classes	1,488	100.0	1,099	100.0
Under $450	380	25.5	150	13.6
$450 to $549	298	20.0	144	13.1
$550 to $649	234	15.7	146	13.3
$650 to $849	316	21.2	294	26.8
$850 to $1,049	121	8.1	176	16.0
$1,050 to $1,249	30	2.0	54	4.9
$1,250 and over	65	4.4	102	9.3
No earnings	20	1.3	14	1.3
Not reported	24	1.6	19	1.7
Native mothers	276	100.0	453	100.0
Under $450	30	10.9	26	5.7
$450 to $549	36	13.0	29	6.4
$550 to $649	46	16.7	60	13.2
$650 to $849	74	26.8	113	24.9
$850 to $1,049	42	15.2	99	21.9
$1,050 to $1,249	9	3.3	34	7.5
$1,250 and over	25	9.1	73	16.1
No earnings	8	2.9	9	2.0
Not reported	6	2.2	10	2.2
Foreign-born mothers	1,212	100.0	646	100.0
Under $450	350	28.9	124	19.2
$450 to $549	262	21.6	115	17.8
$550 to $649	188	15.5	86	13.3
$650 to $849	242	20.0	181	28.0
$850 to $1,049	79	6.5	77	11.9
$1,050 to $1,249	21	1.7	20	3.1
$1,250 and over	40	3.3	29	4.5
No earnings	12	1.0	5	0.8
Not reported	18	1.5	9	1.4

TABLE 21.—*Births during selected year, infant deaths, infant mortality rate, and per cent of stillbirths, according to employment of mother during year before birth of infant.*

Employment of mother during year before birth of infant.	Total births.	Live births.	Infant deaths.	Infant mortality rate.[a]	Stillbirths.	
					Number.	Per cent of total births.[a]
All mothers	2,662	2,587	337	130.3	75	2.8
Not gainfully employed	1,420	1,370	149	108.8	50	3.5
Gainfully employed	1,242	1,217	188	154.5	25	2.0
At home	360	353	43	121.8	7	1.9
Keeping lodgers	302	296	37	125.0	6	2.0
Other home work	58	57	6	....	1	....
Away from home	882	864	145	167.8	18	2.0
Textile mill operatives	820	804	141	175.4	16	2.0
Other factory operatives	13	13	....	....	....	....
Clerks and saleswomen	13	12	2	....	1	....
Servants, charwomen, etc	21	20	1	....	1	....
Other occupations	15	15	1	....	....	....

[a] Not shown where base is less than 100.

TABLE 22.—*Births during selected year, infant deaths, infant mortality rate, and per cent of stillbirths, according to employment of mother during year preceding birth of infant and interval between cessation of work in cotton mills and confinement.*

Employment of mother during year before birth of infant and interval between cessation of work in cotton mills and confinement.	Total births.	Live births.	Infant deaths.	Infant mortality rate.[a]	Stillbirths.	
					Number.	Per cent of total births.[a]
All mothers	2,662	2,587	337	130.3	75	2.8
Not gainfully employed	1,420	1,370	149	108.8	50	3.5
Gainfully employed	1,242	1,217	188	154.5	25	2.0
In cotton mills	812	798	141	176.7	14	1.7
Ceased work—						
Less than 1 week	5	4	2	....	1	....
1 week but less than 1 month	19	19	3	....	....	....
1 month but less than 3 months	144	140	24	171.4	4	2.8
3 months but less than 6 months	389	383	70	182.8	6	1.5
6 months and over	249	246	40	162.6	3	1.2
No cessation	5	5	2	....	....	....
No report	1	1	....	....	....	....
Other work away from home	70	66	4	....	4	....
At home	360	353	43	121.8	7	1.9
Native mothers	753	729	79	108.4	24	3.2
Not gainfully employed	502	484	47	97.1	18	3.6
Gainfully employed	251	245	32	130.6	6	2.4
In cotton mills	144	142	22	154.9	2	1.4
Ceased work—						
1 month but less than 3 months	22	22	2	....	....	....
3 months but less than 6 months	62	61	10	....	1	....
6 months and over	58	57	9	....	1	....
No cessation	1	1	1	....	....	....
No report	1	1	....	....	....	....
Other work away from home	35	34	2	....	1	....
At home	72	69	8	....	3	....
Foreign-born mothers	1,909	1,858	258	138.9	51	2.7
Not gainfully employed	918	886	102	115.1	32	3.5
Gainfully employed	991	972	156	160.5	19	1.9
In cotton mills	668	656	119	181.4	12	1.8
Ceased work—						
Less than 1 week	5	4	2	....	1	....
1 week but less than 1 month	19	19	3	....	....	....
1 month but less than 3 months	122	118	22	186.4	4	3.3
3 months but less than 6 months	327	322	60	186.3	5	1.5
6 months and over	191	189	31	164.0	2	1.0
No cessation	4	4	1	....	....	....
Other work away from home	35	32	2	....	3	....
At home	288	284	35	123.2	4	1.4
Portuguese-white mothers	685	667	134	200.9	18	2.6
Not gainfully employed	312	302	50	165.6	10	3.2
Gainfully employed	373	365	84	230.1	8	2.1
In cotton mills	257	251	65	259.0	6	2.3
Ceased work—						
Less than 1 week	1	1	1	....	....	....
1 week but less than 1 month	3	3	....	....	....	....
1 month but less than 3 months	54	53	11	....	1	....
3 months but less than 6 months	127	124	34	274.2	3	2.4
6 months and over	71	69	19	....	2	....
No cessation	1	1	....	....	....	....
Other work away from home	9	9	....	....	....	....
At home	107	105	19	181.0	2	1.9

[a] Not shown where base is less than 100.

TABLE 22.—*Births during selected year, infant deaths, infant mortality rate, and per cent of stillbirths, according to employment of mother during year preceding birth of infant and interval between cessation of work in cotton mills and confinement*—Contd.

Employment of mother during year before birth of infant and interval between cessation of work in cotton mills and confinement.	Total births.	Live births.	Infant deaths.	Infant mortality rate.[a]	Stillbirths.	
					Number.	Per cent of total births.[a]
Other foreign-born mothers	1,224	1,191	124	104.1	33	2.7
Not gainfully employed	606	584	52	89.0	22	3.6
Gainfully employed	618	607	72	118.6	11	1.8
In cotton mills	411	405	54	133.3	6	1.5
Ceased work—						
Less than 1 week	4	3	1	....	1	....
1 week but less than 1 month	16	16	3	....	....	....
1 month but less than 3 months	68	65	11	....	3	....
3 months but less than 6 months	200	198	26	131.3	2	1.0
6 months and over	120	120	12	100.0	....	....
No cessation	3	3	1	....	....	....
Other work away from home	26	23	2	....	3	....
At home	181	179	16	89.4	2	1.1

TABLE 23.—*Live births during selected year, infant deaths, and infant mortality rate, according to employment of mother during year following birth of infant.*

Employment of mother during year following birth of infant.	Live births.	Infant deaths.	Infant mortality rate.[a]
All mothers	2,587	337	130.3
Not gainfully employed	1,539	142	92.3
Gainfully employed	1,048	195	186.1
At home	470	49	104.3
Keeping lodgers	417	45	107.9
Other homework	53	4	....
Away from home	578	146	252.6
Textile-mill operatives	543	139	256.0
Other factory operatives	4	....	....
Clerks and saleswomen	11	3	....
Servants, charwomen, etc	13	3	....
Other occupations	7	1	....

TABLE 24.—*Live births, infant deaths, infant mortality rate, and per cent of deaths from gastric and intestinal diseases, according to employment of mother during year following birth of infant, and infant's age when mother resumed work in cotton mills, and nationality of mother.*

Employment of mother during year following birth of infant, and infant's age when mother resumed work in cotton mills, and nationality of mother.	Live births.	Infant deaths.	Infant mortality rate.[a]	Deaths from gastric and intestinal diseases.	
				Number.	Per cent of all deaths.[a]
All mothers	2,587	337	130.3	125	37.1
Not gainfully employed	1,539	142	92.3	36	25.4
Gainfully employed	1,048	195	186.1	89	45.6
In cotton mills	540	138	255.6	63	45.7
Resumed after baby's death	97	97	....	39	....
Resumed during baby's life	443	41	92.6	24	....
Under 2 weeks	2	1	....	1	....
2 weeks and under 1 month	14	3	....	2	....
1 month and under 2	58	13	....	7	....
2 months and under 3	66	7	....	3	....
3 months and over	303	17	56.1	11	....
Other work away from home	38	8	....	4	....
At home	470	49	104.3	22	....

[a] Not shown where base is less than 100.

TABLE 24.—*Live births, infant deaths, infant mortality rate, and per cent of deaths from gastric and intestinal diseases, according to employment of mother during year following birth of infant, and infant's age when mother resumed work in cotton mills, and nationality of mother*—Continued.

Employment of mother during year following birth of infant, and infant's age when mother resumed work in cotton mills, and nationality of mother.	Live births.	Infant deaths.	Infant mortality rate.[a]	Deaths from gastric and intestinal diseases.	
				Number.	Per cent of all deaths.[a]
Native mothers	729	79	108.4	23	....
Not gainfully employed	534	41	76.8	11	....
Gainfully employed	195	38	194.9	12	....
In cotton mills	96	27	....	10	....
Resumed after baby's death	20	20	....	5	....
Resumed during baby's life	76	7	....	5	....
Under 2 weeks	1	1	....	1	....
2 weeks and under 1 month	3	1	....	1	....
1 month and under 2	11	1	....	1	....
2 months and under 3	9	....	....	....	....
3 months and over	52	4	....	2	....
Other work away from home	15	5	....	2	....
At home	84	6	....	....	....
Foreign-born mothers	1,858	258	138.9	102	39.5
Not gainfully employed	1,005	101	100.5	25	24.8
Gainfully employed	853	157	184.1	77	49.0
In cotton mills	444	111	250.0	53	47.7
Resumed after baby's death	77	77	....	34	....
Resumed during baby's life	367	34	92.6	19	....
Under 2 weeks	1	....	....	....	....
2 weeks and under 1 month	11	2	....	1	....
1 month and under 2	47	12	....	6	....
2 months and under 3	57	7	....	3	....
3 months and over	251	13	51.8	9	....
Other work away from home	23	3	....	2	....
At home	386	43	111.4	22	....
Portuguese-white mothers	667	134	200.9	68	50.7
Not gainfully employed	321	49	152.6	15	....
Gainfully employed	346	85	245.7	53	....
In cotton mills	194	57	293.8	38	....
Resumed after baby's death	31	31	....	21	....
Resumed during baby's life	163	26	159.5	17	....
Under 2 weeks	1	....	....	....	....
2 weeks and under 1 month	5	1	....	1	....
1 month and under 2	31	9	....	5	....
2 months and under 3	28	5	....	2	....
3 months and over	98	11	....	9	....
Other work away from home	8	....	....	....	....
At home	144	28	194.4	15	....
Other foreign-born mothers	1,191	124	104.1	34	27.4
Not gainfully employed	684	52	76.0	10	....
Gainfully employed	507	72	142.0	24	....
In cotton mills	250	54	216.0	15	....
Resumed after baby's death	46	46	....	13	....
Resumed during baby's life	204	8	39.2	2	....
2 weeks and under 1 month	6	1	....	....	....
1 month and under 2	16	3	....	1	....
2 months and under 3	29	2	....	1	....
3 months and over	153	2	13.1	....	....
Other work away from home	15	3	....	2	....
At home	242	15	62.0	7	....

[a] Not shown where base is less than 100.

TABLE 25.—*Number and per cent distribution of births during selected year to gainfully employed mothers of specified nativity, according to earnings of mother during year following birth of infant.*

Earnings of mother.	All mothers.		Native mothers.		Foreign-born mothers.	
	Total births.	Per cent distribution.	Births.	Per cent distribution.	Births.	Per cent distribution.
All classes	1,077	100.0	203	100.0	874	100.0
Under $150	419	38.9	72	35.5	347	39.7
$150 to $249	269	25.0	43	21.2	226	25.9
$250 to $349	176	16.3	44	21.7	132	15.1
$350 to $549	141	13.1	26	12.8	115	13.2
$550 and over	31	2.9	3	1.5	28	3.2
Not reported	41	3.8	15	7.4	26	3.0

TABLE 26.—*Births in selected year to foreign-born mothers gainfully employed in specified way during year following birth of infant, according to literacy and nationality of mother.*

Literacy and nationality of mother.	Births to foreign-born mothers.					
	Total.	Gainfully employed year after confinement.				Not gainfully employed year after confinement.
		Total.	In cotton mills.	Other work away from home.	At home.	
Foreign-born mothers	1,909	874	458	25	391	1,035
Able to read and write	1,183	497	265	14	218	686
Unable to read and write	714	368	191	9	168	346
Not reported	12	9	2	2	5	3
Portuguese-white mothers	685	354	200	8	146	331
Able to read and write	238	119	68	2	49	119
Unable to read and write	443	231	132	4	95	212
Not reported	4	4	....	2	2	....
Other foreign-born mothers	1,224	520	258	17	245	704
Able to read and write	945	378	197	12	169	567
Unable to read and write	271	137	59	5	73	134
Not reported	8	5	2	....	3	3

TABLE 27.—*Births in selected year to foreign-born mothers gainfully employed in specified way during year following birth of infant, according to nationality and years of residence of mother in the United States.*

Nationality of mother and years in United States.	Births to foreign-born mothers.					
	Total.	Gainfully employed year after confinement.				Not gainfully employed year after confinement.
		Total.	In cotton mills.	Other work away from home.	At home.	
All foreign-born mothers	1,909	874	458	25	391	1,035
Less than 3 years	189	117	59	5	53	72
3 to 4 years	217	116	64	2	50	101
5 to 9 years	528	283	153	6	124	245
10 years and over	961	353	180	11	162	608
Not reported	14	5	2	1	2	9
Portuguese-white mothers	685	354	200	8	146	331
Less than 3 years	101	72	36	3	33	29
3 to 4 years	83	51	30	1	20	32
5 to 9 years	233	123	72	1	50	110
10 years and over	265	107	62	2	43	158
Not reported	3	1	....	1	....	2
Other foreign-born mothers	1,224	520	258	17	245	704
Less than 3 years	88	45	23	2	20	43
3 to 4 years	134	65	34	1	30	69
5 to 9 years	295	160	81	5	74	135
10 years and over	696	246	118	9	119	450
Not reported	11	4	2	....	2	7

TABLE 28.—*Births in selected year to mothers employed in cotton mills during year following confinement, according to specified number of persons in family, and earnings of father and nationality of mother.*

Earnings of father and nationality of mother.	Births during selected year to mothers employed in cotton mills year following confinement.			
	Total.	In families of specified number of persons.[a]		
		Less than 3.	3 but less than 6.	6 and over.
All mothers	557	253	263	41
Father's earnings:				
Under $450	190	81	97	12
$450 to $549	134	59	62	13
$550 to $649	100	48	46	6
$650 to $849	90	40	43	7
$850 to $1,049	16	9	5	2
$1,050 to $1,249	2	1	1	....
$1,250 and over	3	2	1	....
No earnings	15	12	3	....
No report	7	1	5	1
Native mothers	99	55	40	4
Father's earnings:				
Under $450	20	11	8	1
$450 to $549	18	9	9	....
$550 to $649	25	14	10	1
$650 to $849	21	11	8	2
$850 to $1,049	5	4	1	....
$1,250 and over	1	1	....	....
No earnings	7	5	2	....
No report	2	....	2	....
Foreign-born mothers	458	198	223	37
Father's earnings:				
Under $450	170	70	89	11
$450 to $549	116	50	53	13
$550 to $649	75	34	36	5
$650 to $849	69	29	35	5
$850 to $1,049	11	5	4	2
$1,050 to $1,249	2	1	1	....
$1,250 and over	2	1	1	....
No earnings	8	7	1	....
No report	5	1	3	1
Portuguese-white mothers	200	105	87	8
Father's earnings:				
Under $450	99	51	45	3
$450 to $549	49	29	19	1
$550 to $649	29	15	12	2
$650 to $849	16	6	8	2
$850 to $1,049	1	....	1	....
No earnings	4	4	....	....
No report	2	....	2	....
Other foreign-born mothers	258	93	136	29
Father's earnings:				
Under $450	71	19	44	8
$450 to $549	67	21	34	12
$550 to $649	46	19	24	3
$650 to $849	53	23	27	3
$850 to $1,049	10	5	3	2
$1,050 to $1,249	2	1	1	....
$1,250 and over	2	1	1	....
No earnings	4	3	1	....
No report	3	1	1	1

[a] Excluding infant born during selected year.

TABLE 29.—*Dwellings*[a] *occupied by mothers of specified nativity, according to specified sanitary condition of dwelling.*

Sanitary condition of dwelling.	Dwellings occupied by— All mothers.	Native mothers.	Foreign-born mothers.
Total dwellings	2,638	747	1,891
Rooms:			
Clean	1,166	404	762
Medium	1,249	285	964
Dirty	159	36	123
Not reported	64	22	42
Water supply:			
City	2,586	733	1,853
Dug well	27	8	19
Driven well	9	2	7
Spring	4	1	3
Not reported	12	3	9
Type of toilet:			
Water-closet	2,502	713	1,789
Wet privy	43	6	37
Dry privy	87	27	60
Cesspool	2	....	2
No toilet	1	....	1
Not reported	3	1	2
Location of toilet:			
In dwelling	1,815	555	1,260
On porch	19	10	9
In yard	137	33	104
In cellar	656	147	509
No toilet	1	....	1
Not reported	10	2	8
Sewer connection:			
Sink connected	2,565	728	1,837
Sink not connected	66	17	49
Not reported	7	2	5
Toilet connected	2,491	709	1,782
Toilet not connected	140	36	104
No toilet	1	....	1
Not reported	6	2	4

---

[a] Dwelling means place in which family lived during greater part of year following baby's birth, or in case of stillborn child, where mother spent greater part of her period of pregnancy. Difference between number of dwellings and number of births shown in other tables is due to the fact that there were 22 sets of twins, 6 to native mothers and 16 to foreign-born mothers, and 1 set of triplets to foreign-born mother.

[illegible] average number of rooms, accord[illegible]

[illegible]	[illegible]	No. pe[illegible]
[illegible]	[illegible]	
[illegible]	—	
[illegible]	1	
[illegible]	4	
[illegible]	4	
[illegible]	2	
[illegible]	2	
[illegible]	1	
[illegible]	1	
[illegible]	1	
[illegible]	5	
[illegible]		[illegible]
[illegible]	15	3
[illegible]	—	
[illegible]	1	
[illegible]	4	
[illegible]	3	
[illegible]	2	
[illegible]	2	
[illegible]	—	
[illegible]	1	
[illegible]	—	
[illegible]	2	
[illegible]		3
[illegible]	6	22
[illegible]	—	—
[illegible]	—	—
[illegible]		1
[illegible]	1	
[illegible]		1
[illegible]	—	—
[illegible]	1	
[illegible]	—	
[illegible]	1	
[illegible]	3	
[illegible]		29

[illegible]

Table 31.—*Births in selected year, infant deaths, infant mortality rate, and per cent of stillbirths, according to number of persons per room in selected area and nativity of mother.*

Persons[a] per room and nativity of mother.	Total births.	Live births.	Infant deaths.	Infant mortality rate.[b]	Stillbirths.	
					Number.	Per cent of total births.[b]
All mothers	2,662	2,587	337	130.3	75	2.8
In unfavorable area:						
All mothers	1,527	1,488	233	156.6	39	2.6
Less than 1	565	546	67	122.7	19	3.4
1 but less than 2	819	801	129	161.0	18	2.2
2 but less than 3	113	111	25	225.2	2	1.8
3 but less than 5	5	5	3	....	....	....
Not reported	25	25	9	....	....	....
Native mothers	282	276	38	137.7	6	2.1
Less than 1	147	143	12	83.9	4	2.7
1 but less than 2	125	124	22	177.4	1	0.8
2 but less than 3	10	9	4	....	1	....
Foreign-born mothers	1,245	1,212	195	160.9	33	2.7
Less than 1	418	403	55	136.5	15	3.6
1 but less than 2	694	677	107	158.1	17	2.4
2 but less than 3	103	102	21	205.9	1	1.0
3 but less than 5	5	5	3	....	....	....
Not reported	25	25	9	....	....	....
In favorable area:						
All mothers	1,135	1,099	104	94.6	36	3.2
Native mothers	471	453	41	90.5	18	3.8
Foreign-born mothers	664	646	63	97.5	18	2.7

[a] Excluding infant born during selected year.

[b] Not shown where base is less than 100.

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